இண்டஸ்ட்ரியல் கைடு

COTTAGE INDUSTRIES GUIDE

(ILLUSTRATED)



BY

P. Goyle

(Specialist in Cottage Industries)



Let us be Practical Series No. 3

2.

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Price Rs. 4/-

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CONTENTS

Introduction

This subject of cottage Industries is so vast and vague, that it is quite difficult to master it. I have read hundreds of books and literature on various industries but I was not satisfied, as there was not a single book, which could give me an cxact idea, as how to put the industries into practice. What is the machines ? What is these working method, what are the raw materials, how to manufacture, how to sell, etc,, which are many problems. All these books just were full of formulas and schemes, and as such these were the least helpful in putting the things in practice. So after long experiences which I gained in India and abroad, specially in Japan, I have been able to give you a small practical book on the subject and over hundred practical industries are fully illustrated and discussed. I have done my best and I wish you to put these in practice. If this proves a source of adding to the income of any family or if really helps anybody I would feel myself amply rewarded and my labour well directed and appreciated.

P-7, Misson Row Ext.
CALCUTTA—1

PREM GOYLE

Do Me a Favour Please

Believe it or not, development of cottage industries can play miracles in the uplift of our Country. This cause, therefore, should be very dear to all of us. I, therefore, request you for a favour to kindly pass this book or the information to as many friends and relations and thus help yourself and your country.

Thanks,

Prem Goyle.

"The fair face will get its praise

though the owner keeps silent".

———

Hidden Power & Wealth in Cottage Industry

India's Salvation lies in her cottage industries. After a century long struggle, we have achieved our political freedom and our country is pulling all her resources for its rapid industrilazation but the economic goal of this modern state is not merely to industrialize itself but, are also to eradicate unemployment. Consequently, in a thickly populated country like India, with a superfluity of employable man-power; cottage industries are not only the best-suited but also the most econamic as compared with the heavy industries. The machinery necessary for the cottage industries can be usually manufactured in the country itself and the Government has taken a laudable step in this direction.

The cottage industries are the golden key to life and livelihood in India, and unless we adopt them with zest and zeal coupled with an iron determination, there is no future for our teeming millions, because we certainly do not welcome a type of industrialization that will widen the gulf between the rich and the poor, which alone can be bridged over by the small industries owned by men and women with a small capital, The cottage industries alone can enthuse them with their latent energy and go ahead spirit. The widespread popularity of cottage industries alone can quench our youngmen's hankering for paid positions.

Japan had put her dreams of industrilization quickly through the cottage industries, and there is no reason why not

our country can be beneficant the same way very few individuals in India can afford to start big factories, but cottage industries are within the reach of every body, and does not require any special technical training, It is more appropriate to make a humble start and build it steadily up along the rungs of experience and thereby avoid wastage, worry, disappointments and economic disasters. In fact, the cottage industries are the only salvation for the middle class. People who are nowdays being put to a tight corner. The gentlemen of middle class people must helm the wheels of labour. Cottage industries are not merely industrialized cottage but rather highly organized. mechanized, electrified units of industry highly respected throughout the world.

Only through cottage industries our intelligentsia can liberate their kith and kin from the deadly clutches of poverty. With rising prices and falling incomes no paid job can bring a person enough money to make the two ends meet. On the contrary, even a small machine can bring you enough living to keep your near and dear ones fed, clothed and housed. Little wonder a tailor, a shoe-maker or an uneducated person with a small toy-making machine, can earn much more than a a graduate be labouring himself in an office.

Cottage industry is the real thing for every one. Nations are not enriched by big industry alone. Industrious individuals, with small independent undertakings, make their country prosperous and are the pillars of national strength. Always think 'can I manufacture something ? It is always prudent to work for yourself rather than for somebody else, You can plunge into a cottage industry without testing out your ideas, because it brings you all the education you require for the purpose. By manufacturing quality goods you can build your

own market and fight out any competition by producing cheaper and better goods, which is always a possibility where the industrial unit is small and properly controlled. It does not require much capital to buy a small machine and the risk is also not great, The key to the success in cottage industries is hard work and if you posess this capacity, you need not be afraid of anything else. With a calm face and clarity of mind you can start a business from a scratch with full confidence, It is best to begin a new business with a clean slate.

Cottage industries are best-suited to the peculiar circumstances prevailing in India. We should not blindly knit the pattern of Europe and America. Cottage Industries have shown their vigour and vitality even in the highly industrialized countries. In France, for example, about 99% of the industrial establishment employ less than 100 workers and of the great majority employ less than fifty. In Japan more than 55% of the industrial population work in small undertakings employing less than five workmen. Japan knits the fabric of national wealth in the cottages. Why should not India ?

The Indian peasant remains idle for most of the year. A network of cottage industres can provide the peasant with supplementary income. Cottage Industries can alone cure our crippled artisans. Thus alone we can utilise our labour to the fullest extent, and save ourselves from the lop-sided industrialization. As the most important pillars of our economic life, the cottage industries will reduce the inequalities of wealth distribution and restore the equilibrium of our social life.

In the first place, what is a cottage industry ? Definitions are many, and introduce a great variety of criteria. Some hold that a cottage industry may only engage members of one

family who work entirely for their own benefit. Other feel that the employment of a neighbour or friend, or even of one or two paid hands, does not alter their status. Some insist that no electric or other power and no machinery may be employed. Other point out that should this be so, then Japan, the home of cottage industries, is guilty of false pretences.

Yet others feel that in cottage industrias the owner must carry on manufacture with the assistance of no more than nine helpers. be they partners, members of this family, or wage-earners. But there are others who cannot understand why the more prolific cottage worker may not employ his entire progeny,

Then, there are those who think that the essential consideration is that the work should be carried on in the workers own cottages. But why, ask others, should anyone be forced to introduce into his own home obnoxious trades like tanning ? And what about those trades which by their very nature must be carried on in the woods, fields and rivers ? Can anyone fish or tap plam trees under his own roof ?

Still others insist that cottage industries can only exist in rural areas, that they must have no invested capital, except in a few simple implements, and in the day-to-day purchase of raw materials : that no even the simplest machanical contrivance may be used unless the cottage worker himself made it and so on.

All the Government are eager to help cottage industries. But when the point of who qualifies for such help is finally agreed, the more controversial questions arise of what form this help should take, and in what manner these industries should be developed.

A thousand' opinions are voiced in each of India's 300 languages, disputing and debating the fundamental principles and every small detail alike, with conviction and uncompromising stubbornness.

If the task were merely to make cottage industries an integral part of India's economy, to increase their productivity and raise their cottage worker's living standards, if all available human energy, raw materials and other resources could be mobilized to achieve this end, India could be transformed from poverty to plenty in a few years' time.

This is where India's problems differ so much those which other countries had to meet in developing their industries. In Japan there was no popular sentiment against the use of power and mechanization. Experts formed a plan, and it was for the individual to fit.

This is the background against which we must measure our cottage industrialization plans. We cannot implement large-scale co-ordinated schemes, so it is no use creating them ; we cannot freely introduce mechanized production methods, So it is futile to consider them : we cannot harness all our labour and material resources, so nothing is gained by contemplating their potentialities.

Then, what is to be done ? We must do the best we can under our peculiar circumstances, where and when the opportunities present themselves. We can organize co-operative societies among those who are willing to co-operate ; give electric power where available, to whose who see no evil in using it ; provide machines or at least modern hand tools to those who are willing to employ them : teach uptodate production methods to those who are willing to learn them ; introduce new raw

materials to those who are willing to adopt them ; supply better designs to those who are willing to copy them ; do everything humanly possible to help those who are willing to be helped.

Cottage Industries should be modernised with a view to create many labour saving devices, so that cottage industries would be a divine work conducted witb pleasure and tor profit and not viewed as a drudgery and thrust on the artisans as a necessary evil for their existence.

Every one of us connected directly or indirectly with development of cottage industries in India, should make the best use of these. If the artisans should forget their age-long methods of doing every thing by hand in some manner or other they should now try mechanise most of the operations without sacrificing the handi-work in the industry. These are to be considered as a labour saving devices that tend to increase production and to perfect the quality of the goods. The examples of the various countries in the West and the Far East should emulate us into ideals of perfection and increased production. The druggery part of the indutry should be eliminated as far as far as possible. Slight mechanizatisn at different stages in manufacture of cottage industry products is essential. The methods of productiod have to be changed to meet the changing demands of the customers either in quality, designs or quantity. We have to be in the line with the march of time. Indian cottage industry products should now flood the markets of the would in the same manner as Japan did a few years back and turn the whole country happy, healthy and wealthy. In major Industries it is the machine that works and the hnman element is only a spoke in the wheel of production. While reverse is the case with Cottage Industries. Herein is the specialised and perfected art through the handiwork of the hand of humanity

is seen through the products of Cottage Industries. These speak of the national traits of the workers. There should be a system and design in the fabrication of these products.

Every country has its own emblem and so our Cottage Industries should have an emblem of purity, perfection and Peace.

The Cottage Industries Board should help in this design of these products by establishing a central Board of Inspection and every product that is made on the Cottage basis should be scrutinized by the experts in the Board and should give it a mark to signify that it is a product that has been assessed for its genuiueness. Thus the qnality should be established in these industries to help the Cottage Industries worker to prefect his goods. Such of those goods that do not come under rules of the standardization Board would be returned with suggestions for rectification. This Standardisation should be instituted and every Cottage worker be asked to send his goods for the scrutiny of the Board. It is then possible to bring these goods to a systematised method. The cottage industries Board is requested to help the designing of products at an early date.

(*a*) The unit of production has a tendency to become smaller with the increasing use of electricity.

(*b*) Standardised and large scale production is out of question in the case of artistic goods and luxury products.

(*c*) New industries in the experimental stage are first tried on a small scale and when their success is established, they are converted to large scale.

In India there is a need for a special stress to be laid on such small scale and cottage industries. In Japan, practically in

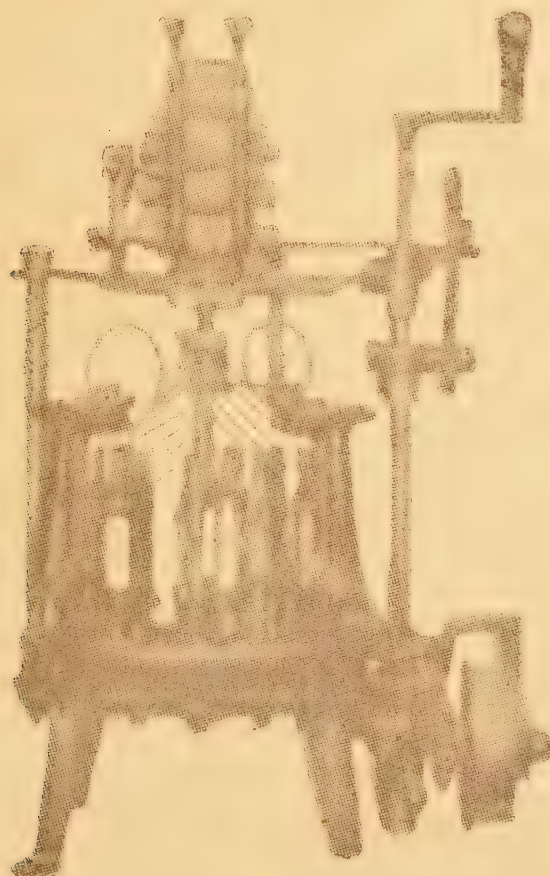
every farmer's cottage, there may be seen small handloom in which the women folk weave the narrow cotton fabrics from which the Japanese garments are made.

In the first place, we cannot overlook the fact that the peasant in India is idle for a considerable part of the year, he is busy only tor part-time. This can be termed as partial unemployment. The only way to eradicate this evil and to provide the poverty-stricken peasant with, supplementary income is to spread a network of small scale and cottage industries through out the nook and corner of India. Cottage Industries will not only keep him busy for the full time, but will also enable him to emeliorate his economic conditions, bringing enormous wealth to the country as a whole.

Let us be practical

BRAIDING MACHINE

For Making : Laces, tapes, cords, wire covering, Elastic tapes & Fine braids.



BRIEF OF THE BRAIDING MACHINE

START AN INDUSTRY WITH Rs. 250 AND EARN Rs. 100 PER MONTH.

This industry has made rapid progress and has reached a point of perfection never before attained. This is due partly to the demand which a highly competitive market has made for machines of extreme mechanical adaptability and partly to the inventive genius of designers in the industry who have brought

forward continued improvements to meet the existing conditions.

You can make all kinds of tapes, braids, elastics and cords and shoe laces, etc., with the help of this industry.

Needless to say, it is to the advantage of those who select the best and easy going machines at the lowest possible price, and we take this liberty to recommend the use of this machine which no doubt will give you every satisfaction.

1. *The machine itself* :—To make the various kinds of cords or tapes to braid there are various kinds of machines ranging from machines with 7 spindles upto 70 spindles. Machines with odd numbers of spindles are suited for braiding flat tapes and those with even numbers are suited for braiding round cords. Machines with larger numbers of spindles are suited for braiding wider or thicker size stuff.

2. *Operation* :—Can be operated by hand and power. Fraction of a H. P. is required to work a machine and hence you can work it with your domestic electric connection like a table fan.

3. *Material* :—Ordinary yarn C. or As. C. 16,20,32,42, As. 300 & RT 20,40,50 is quite suitable for making decorative tapes and shoe laces of ordinary and better quality mostly in demand in the market but finer yarn or silk may be used for finer work.

4. *Capacity* :—Each machine is capable of making about 800 ft. per shift of eight hours or 250 pairs of shoe laces per

shift. About 25 lbs. of yarn is enough for each machine per month. About Rs. 100 can be easily earned per month per machine costing about Rs. 250.

5. *Experience* :—These machines are simple to operate and no skill is required. Even a child of tender age can operate them. It is lighter than a sewing machine in a family. It is capable of taking a variety of jobs like shoe laces, elastics, braids and saree borders of daily use. One can start an industry even in a village with a small investment and earn a decent living and utilise the services, in spare hours, of the members of the family.

Contents : Each machine is complete with single head, number of spindles, all standard accessories and instruction book.

Price & Delivery :

Price : 8 spindles Rs. 235/-
9 spindles ,, 265/-
12 spindles ,, 310/-
16 spindles ,, 365/-

Delivery : Immediate.

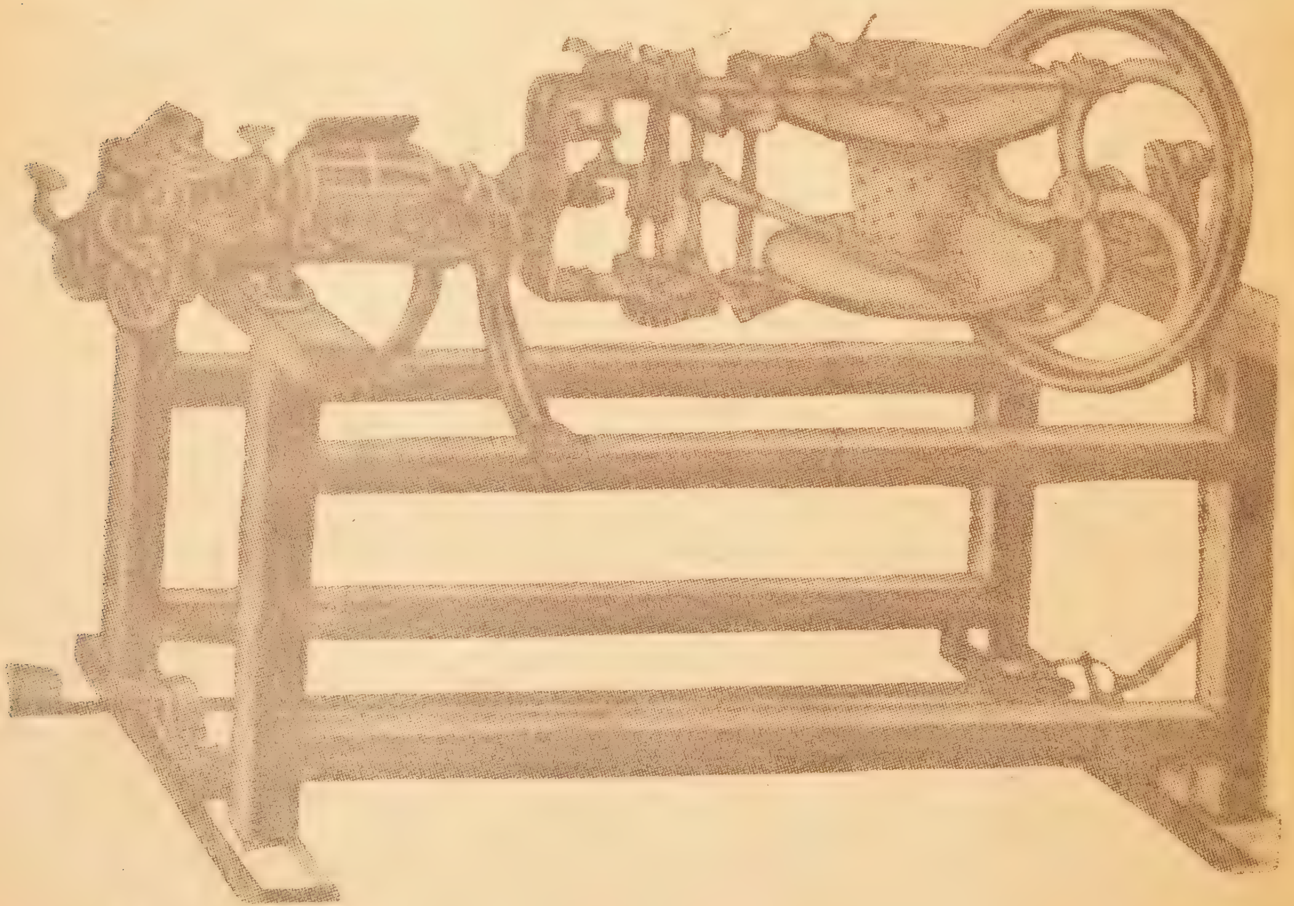
The products manufactured by these machines, have good market, and there is no foreign competition, and then there is good market in Ceylon, Burmah, Nepal and other middle East Countries.

You can also start a big factory with these machines and can establish yourself.

ROPE MACHINE

For making : Twine, Sutli, Baan, Rope, Cord from : Raw jute, cotton threads, coconut fibre, moonj, rice straw, grass, hairs, hemp, Aloe fibre and other material which can be easily twisted.

You can make fine types of Twine, Baan or Sutli upto $\frac{3}{4}''$ thick rope.



Make : Japan.

Special Features and working :

(*i*) Very simple and convenient working. This can be driven by hand, foot and power. By power 1 H. P. is required whatever material you are to use. Simply feed it in the feeders.

then turn round the wheel or pulley, the Shaft and Twisters would start working and the material feeded will get a start, getting twisted, and get into the gauges. Here you are to see the gauge, as to what thickness of Baan, Rope, Sutli or Twine you want. When the material passes through the gauges, it passes further automatically on to the finisher. This finisher moves round with great speed, and cuts all extra, unnecessary material of the rope, and give it a smooth, uniform, even finish, and the rope passes further on to the clutcher, which winds it automatically on to the roller drum. Now your Rope, Twine, Sutli or Baan is ready of your liking of your desired quality of thickness and fineness. Unscrew the drum and take out the roll of the Rope, Baan or Twine, and fix up the drum again and carry on with the production. Each machine is supplied with six gauges of different types.

(*ii*) Thickness of ropes can be adjusted freely.

(*iii*) Twists counts can also be adjusted freely.

(*iv*) Parts can be easily interchanged.

(*v*) Machine is strongly built of good cast iron and mounted on strong seasoned wooden frame, so as to give good service for years.

Specifications :

Iron and steel used throughout, mounted on strong wooden frame—

Size : $4' \times 3' \times 2\frac{1}{2}'$.

Weight : 162 lbs or 2 maunds nett.

Packed condition : 3 maunds.

Each machine is complete with 2 feeders,

finishing apparatus, pulleys, 6 six gauges, tools and instruction book.

Production : 20 lbs per hour by hand drive.
35 " " " " foot "
45 " " " " power "

Price : Rs. 395/-

Scope : There is very good scope for this industry and goods can be sold even in a small village, and not to speak of big cities—

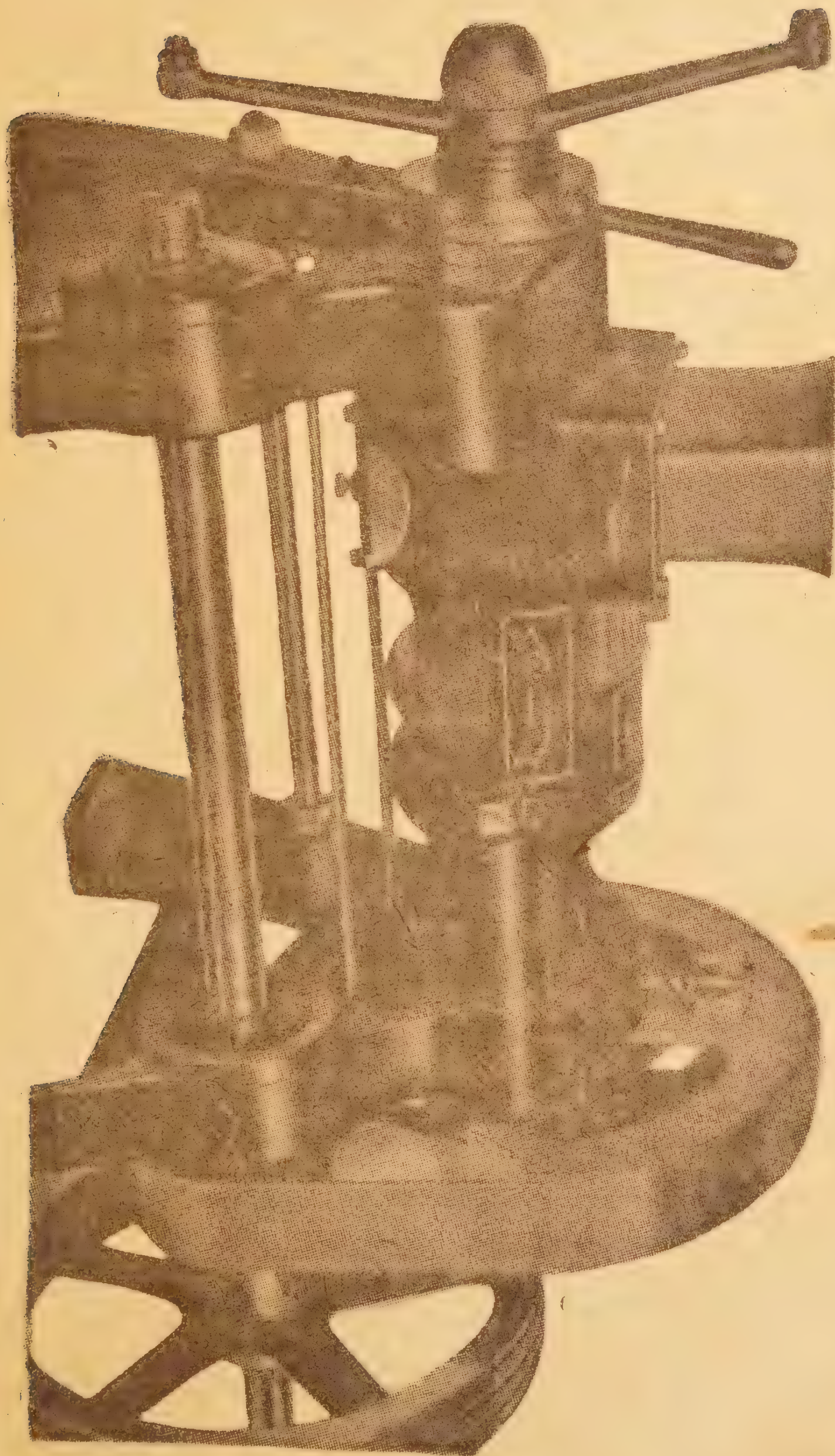
Raw materials are freely available according to your requirements.

Training :—You must have noticed that the working is so simple, that even a woman, or a small boy can run it, and as such no technical knowledge is needed. Only a few hours' pratice for feeding the material in the feeders is required.

Spare Parts :—Are freely available with the dealers, and moreover all the parts are so simple, that these can be made locally even in a small village.

Start this paying industry with Rs. 500/- and start earning Rs. 150/200 a month.

OIL-EXPELLER



A useful, paying, profitable and easy industry for a small village or a big city alike. You can

start this small business with one machine, or can install a big factory, by installing many such machines. You can use and sell the oil extracted as it is in the raw form, and carry on with your business, or you can refine the oil still further, add some scent, pack in nice bottles and sell in the market under your brand and names and thus become an oil merchant.

Price : 998/- Each machine contains spare tools and instruction book.

Guide to on oil-expeller—Mechanical farming, Uil Self-Supplying, Promoting Mechanization of Agricultural Industry & setting fire to Oil-extraction Field.

Operation Of Oil Expeller

Start of the machine :

At first, turn the Regulative Handle clockwise to draw back the Worm Shaft a little. Then let the machine run. Put the raw materials little by little into the Hopper as the forerunner. As soon as the drum warms up and oil cakes begin coming out of the Outlet, the machine is ready to function.

By feeding raw materials increasingly, residue will stick equally all around the shaft and it falls down from the Outlet as dry cake successively. The drum in the meantime gets hot gradually and the expelled oil begins to flow out of the Oil Outlet. Upper side of the oil-cake Outlet becomes too hot about to burn

fingers and the Oil-Cakes are naturally warm. The oil-expelling is now in best condition. However, if oil-cake is used for the forerunner, in stead of raw seeds, the machine will heat up quicker.

Adjustment of pressure by the state of Oil-Cakes :

Generally speaking, proper thickness of Oil-Cake is about 0·6 mm. Control the Worm Shaft tightness by the Regulative Handle according to the condition of Oil-Cakes. If more pressure is necessary, turn the handle anti-clockwise. If the seeds choke up the drum and push back the seed for instance, turn the handle clockwise by, say, half a revolution. If the Worm Shaft is tightend up so firmly as not to allow oil-cakes come out at all, friction between inside of the Cake Outlet and Shaft end will cause wears of that part. Therefore, be careful not to tighten it up too much.

When Motor stops or Belt slips, turn the pulley reversely. The choking materials fall down out of the Exhauster. Then the drum becomes empty : and start the operation.

Do not put the hand deep into Hopper while driving, because the revolving screw shaft is liable to cut fingers.

Overhauling Of Oil-Expeller

A. When the Worm Shaft is drawn out for cleaning, fine threads of the screw entrance should also be cleaned up.

B. When Cage Bars are broken up,

1) Strike down clockwise the Fixing Handle and draw out the Worm Shaft by turning the Regulative Handle also clockwise.

2) Take off two Assembling bolts on the right-hand side of the Drum, and untighten another two on the left-hand side. Then turn the drum sideway and secure it by tightening the loosened bolts.

3) Take off the Ring with the flat steel-rod.

4) Apply the rod on to one of the Cage Bars and strike it off. The rest of Bars will easily come off.

5) For assembling, after cleaning Cage Bars and inside the drum, put grooved bars and plain bars alternately into lower half of the drum.

6) Insert the shaft temporarily and place the balance of Cage Bars around it in upper half.

7) The space for the last piece should not be too wide. If it were so wide as you can put it easily by hand, the arrangement cannot be close enough. In such an instance, drive a Spacer with an hummer in between some bars, to tighten the hold of the 16 bars together.

8) The surface of the bar arrangement ought to be even. Make sure the even surface by feeling of finger touches, and screw the Ring on.

9) Raise the drum and return it to the original position. Fix it temporarily with two bolts.

10) Push the shaft in up to the end. After making sure that the shaft is accurately in the centre, tighten the bolts. Lubricate oil-cups on both sides of the Hopper and the Gear. Then turn the Regulative Handle clockwise a little and tighten up two bolts on the left hand side. Now the assembling is finished. The machine is ready to run.

Oil Refining

A. Natural Separation :

1. Low viscosity oil—Leave the expelled Oil undisturbed for, say, 3 days at the atmospheric temperature of 30°C to 50°C. Solid impurity will then precipitate.

2. High viscosity oil like Castor Oil, Rice Bran oil—Warm up the expelled oil to about 80°C. and leave quietly for about 3 days.

B. Mechanical Separation :

3. With Bags—Make a bag of about 3″ diameter & 2′ in length with cloth of fine texture, and put in the crude-oil for natural filtration. In this instance, if quickly filtration is wanted, the crude oil should be heated. Filtering is done more quickly if the crude-oil is heated.

4. With Filter Press—If this is adopted, filtration can be made by far more efficiently.

C. Decolorising :

a. Heat the raw oil from 100°C. to 150°C. and put the decolorising chemicals (Bentnite, Fuller's earth) in it.

b. Decolorising chemicals must be free from water. Before using, dry it on Steel-sheet, or in a Pan.

c. Agitate the mixture of the oil and decoloriser at about every 20-30 minutes. Then oil will be cleaned in one hour.

d. In ordinary formula, the decolorising chemicals are at the rate of 3-20% by weight of crude oil.

e. If refined with over 20%. the result will be as good as Salad Oil.

Keeping Of Oil

For better preservation, boil the oil at 100°C. to 130°C for 20 to 30 minutes before sealing. Seeled package, can, pot or the like should be kept in a cold, dark place.

Oil Seeds

The first importance is in removal of foreign matters and the moisture contents.

a. Separate the impure solid matters like sand, stone, etc., in order not to damage the friction parts of the machine.

b. Ideal percentage of moisture is about 6 to 8%.

c. When raw materials contain excess moisture, the drum does not get warm enough and oil squeeze is not satisfactory. Therefore, dry up the seed either by airing or by heating, for better efficiency in the squeezing.

d. When raw materials are over-dried, oil-cakes will be in powdery forms like Rice Bran. In such on instance, give moisture to the seeds by sprinkling water or by steaming.

For handling various Oil Seeds, the following suggestions are, we hope, of some value to our clients :—

A. Sesame (Gingelly) :

Preparatorily, heat the drum to high temperature by feeding seeds or oil-cakes over and over again.

B *Castor Seed* :

(1) Toast or parch the raw materials in a pan in such a degree as a part of the skin is charred.

(2) The heat of the drum is better kept high.

C. *Copra* :

(1) Break up pieces into approx. $\frac{1}{4}''$ square.
(2) The big sound of air-explosion inside the drum is not harmful.

D. *Cotton Seed* :

(1) Take off lints as clean as possible. Lints make big obstacles in the oil yield, as they are liable to choke the Worm Shaft. Use Linter Machine for efficient removal.
(2) Better take the husks off after breaking the seed.

E. *Peanut (Groundnut)* :

Keep dry in such an extent as we can chew pleasantly.

SPECIAL FEATURES

1. NO PREPARATORY TREATMENT OF MATERIAL REQUIRED : No need of steeping, steaming.
2. AUTOMATIC EXTRACTION ; Trouble to take out residue saved requiring, neither Partition board nor Mat.
3. SUCCESSIVE EXTRACTION ; No need to use either oil vessel or pressing pump.
4. SMALLER TYPE AND STRONGER MAKE ; All material motor worked oil extracter wing of smallest type.

5. HIGHEST RATE OF EXTRACTION ; Greater production than by Chemical process.
6. UNPARALLELED HIGH EFFICIENCY ; Yields 42 lbs. of rape oil out of 100 lbs. of material per hour.
7. MINIMUM LABOUR ; Workable by one operator, as no laborious work for handling is needed.
8. EASY TO HANDLE ; Pressure and adjustment is controlled by a single operating handle.
9. MINIMUM EXPENSES : No fuel needed. Use of consuming articles minimized.
10. LOWER PRICE : Due to adoption of smallest type by economized use of material lowest Price is naturally available.

Size of Main Parts :

Dia. of Drum (inside)	$2\frac{5}{16}''$
(outside)	$6\frac{1}{4}''$
Length of Drum	12″
Length of Worm Shaft	21″
Pitch of Worm Shaft	1″
Dia. of Large Gear (pitch circle)	$12\frac{1}{2}''$
Dia. of Pinion Gear (pitch circle)	$3\frac{1}{3}''$
Gear Ratio	21 : 75
Dia. of Pulley (V & Flat)	14″
Revolution :	320 R.P.M. (average)
Necessary HP :	3～5HP

Material of Main Parts :

1.	Worm Shaft	Manganese steel
2.	Cage Bars	Tool steel
3.	Ring	Cast Iron
4.	Large Gear	Cast Iron
5.	Pinion Gear	Mild steel

Accessories :

1. Worm Shaft 1 pc.
2. Cage Bar 1 set.
3. Ring 2 pcs.
4. Spacer 3 pcs.
5. Screw Stud driving Ro 1 pc.

Measurement		
N. W.	G. W.	C. ft.
360 lbs	440 lbs	14.5

Expelling Capacity

H. P.	R.P.M.	Capacity (Bushel per 10 hours)
3	300	20
5	400	20~30

Remarks : 5 H. P. is fitted for the large seeds such as Peanuts, Copra & etc.
1 bushel=8 gallons.

Operational Cost

(1) In case driven by an Oil Engine

Raw Material	Rs. 144	(4 mds. of Sarson at Rs. 36 per md.)
Wages	Rs. 2 per day/man	Rs. 2 per day/man
Engine Oil	Rs. 4/2/- per day	3 glns. at Rs. 1/6/- per gln.
Interest	Rs. -/5/- per day	6% per annum on Rs. 2,000
Depreciation	Rs. /7/6 per day	9% per annum on Rs. 2000
Unforeseen Expenses	Rs. 1/3/6 per day	This item may include rent for a space of 5' × 10′ for machine insallation and storage.

Total Rs. 152/7/0 per day

(2) In case driven by an Electric Motor

Raw Material	Rs. 144	(4 mds of Sarson at Rs. 36 per md.)
Wages	Rs. 2 per day/man	Rs. 2/- per day/man
Power	Rs. 2/6/3 per day /3H.P.	
Interest	Rs. /3/9 per day	6% p. a. on Rs. 1,500
Depreciation	Rs. /5/6	9% p. a. on Rs. 1,500
Uniforeseen Expenses	Rs. 1/8/6	This item may include space of 5′ × 10′ for machine installation and storage.

Total Rs. 150/8/0

Yield 39% of the weight of Sarson seed. (125 lbs. out of 4 mds.)

Sale Proceeds

1.	Oil	Rs. 132/12/-	125 lbs. of Sarson oil, or 39% of 4 mds. of seeds, to be sold at the wholesale rate of Rs. 85/- per md. or 2/2/- per seer.
2.	Cake	Rs. 29/4/-	195 lbs. of cake at Rs. 12 per md.

Total Income Rs. 162/1/- per day

NETT PROFIT Rs. 9/10/- per day in case driven by an Oil Engine

Rs. 11/9/- per day in case driven by an Electric Motor

Crushing Cost per Maund of Oil (Sarson)

Rs. 5/10/0 in case of an Oil Engine

Rs. 4/5/6 in case of an Electric Motor

Remarks : The Nett Profit per day and the Crushing Cost of Sarson Oil per maund as given above are based on the assumption that only 4 mds. of the seeds will be first crushed and then the cake will be treated for a 2nd extraction, a level of efficiency which even a beginner may attain without difficulty. As he gains more experience and skill in handling the seeds and machine and attains the full yield of 39% on the full crushing capacity of 8 mds. of Sarson seeds every day, his money-earning capacity will be increased to :—

Rs, 2 -1-0 per day in case of an Oil Engine

Rs. 31-6-1 per day in case of an Electric Motor,

and his Crushing Cost per Maund of Oil (Sarson) will be **reduced to :**

Rs. 26-13-0 in case of an Oil Engine

Rs. 2-2-9 in case of an Electric Motor.

3

1. Crushing Cost per Maund of Sarson Oil by Different Machines :

(1)	Wardha Ghani	Rs. 7-8-0
(2)	Ordinary Bullock Kholu	Rs. 11-0-0
(3)	Rotary-Type Power Kholu	Rs, 6-8-0
(4)	Mill-Type Expeller	Rs. 5-0-0

2. Report on Economics of a Bullock Kholu

Initial Cost	Rs.	1,000
1. Two Bullocks (@ Rs. 300)	Rs.	600
2. Kholu, Shed, & Accessories		400
Total initial cost	Rs.	1,000

Crushing Capacity	12 to 13 srs. per charge, 4 charges p. d. (48 to 52 seers per day)
Oil Recovered	15 to 16 srs. per day
Yield	31.25 to 32.70% of the wt. of Sarson seed

Operational Costs

1. Wages	Rs. 2 per day/worker
2. Bullock Feed	,, 4 per day/2 bullocks
3. Raw Material	,, 43-0 to 46-13-0 p. d. Sarson seed @ Rs. 36/-
Total Cost p d.	Rs. 49-3-0 to 52-13-0

Sail Proceeds

The Kholu recovers 10 seers of the better quality oil out of 48 seers of Sarson seed and another 5 seers of 2nd quality oil out of the cake. In case 52 seers are crushed, it gets 11 srs. of

of the better quality oil and 5 srs. of the 2nd quality oil. The better quality oil is sold at Rs. 2-12-0 per seer and the 2nd quality at Rs. 2-8-0 per seer. Hence :—

1.	Oil Sale	Rs. 40-0-0 to 42-12-0 per day
2.	Cake Sale	Rs. 9-14-0 to 10-13-1 per day (at the rate of /12/-)
Daily Margin		Rs. 0-11-0 to 0-13-0 without deduction of interest & depreciation.

Ten Spindles Tradle Spining Machine

General description : This is operated by foot and works on the tube spinning principle. Silvers obtained from cotton are fed into the spinning machine working on the tube spinning system. The slivers are put into thin tubes resting on wooden reels which revolve with the help of wooden rollers run on top gears. At the time of starting some thread is wound on the reel and ends are connected with the slivers in the tubes. As the tubes rotate, the portion of the thread between the revolving reel and the tube is released. Due to its weight the tube tries to come down and in the process cotton is fed out of the slivers. As soon as the tube comes down

to its original position, it again starts revolving. Feeding of cotton from the tubes and twisting of the yarn take place continuously. Adjustment of the yarn count is made by weights and sets of gears provided for the purpose. In view of the comparatively small investment required, this plant is good for spinning coarse yarn of smaller counts. Is is particularly suitable for small towns where it can supply yarn to handloom weavers within a certain radius. The parts of the machine are simple and easy to fabricate in workshops without elaborate equipment. The yarn produced.

Raw materials—Ordinary cotton or cotton from rags or waste.

Its outturn compared with charkha is given as follows :

	8 hour output (in Chataks) from	
No. of count of yarn	**Charkha**	**Ten spindle wheel**
12	13·5	49·5
14	11·5	43·5
16	10·0	40·0

Price of machine Rs. 592/- Ex. Godown.

We are sorry for no illustration-Make.—Japanese. Size of machine $3 \times 1\frac{1}{2}' \times 3''$ weight appear 86 lbs. Delivery from stock.

A very good industry & very paying. Very big demand of this industry in India, as in Japan.

———

Dry Clearing & Laundry

You must be thinking this industry to be small, or not worth handling, but I may tell you that this industry requires no introduction. It is ever on the increase, and there is very big scope and very big profit. You can earn Rs. 200/2000 a month, depending on the city and the sight you choose and the quality service you give. Leaving aside big cities in foreign countries, if you only see only the past history of 25 years of this line, you will be surprised that over 5000 new Dry Cleaners & Launders have newly established business and all of them an doing well. Most of the new enterprizes have been started by educated and rich people, and so much so, many people have taken foreign training for this line. Now we are only discussing business on a moderate scale for which no training or big experiences are necessary.

Special advantage, with this machine is that it is complete unit with $\frac{1}{3}$ H. P. Electric motor,

(*a*) Electric washer, Hydro extractor, tools, hose pipe, cord, plug, Electric heater & Instruction book.

(*b*) This machine would do, washing and dry cleaning at the same time.

(*c*) You can use this machine, as you start yours Radio ; the handling is so easy. No extra.

Electric motor is needed, your domestic current is quite sufficient.

All these are the latest machines all over the world, that do dry cleaning and washing both.



Specification & make :

1. It has great efficiency. One load—about 10/12 men's shirts is done in about 5/8 minutes for washing and 2 woolen suits for dry cleaning.

2. It uses very little electricity—approximately one KW in five hours.

3. It is assembled from thousands of pieces expertly produced, and therefore all parts are technically perfect.

4. It is constructed completely of first-class metal, mainly aluminum, copper and brass, and therefore guarantees great durability.

5. It takes very little space—930 × 600 700m m.

6. Its operation is very easy.

7. It is technically accurate and pleasing, even to the non-expert, and above all it prolongs the life of the cloth. It would wash and dry clean all types of clothes. It is a complete machine including mottor.

Capacity of Washing Vessel 20 gallons (approx.)

Efficiency of Motor O'25 K.W.—$\frac{1}{3}$ H. P.

Current : 220 volts, single phase, 50 cycles.

Gross weight export packing—35[illegible] lbs.

Make Chezekesl-vakia. Price Rs. 898/-.

Besides this machine, we have another similar type of machine.

Make—German.

Capacity—3/4 wollen suits Dry cleaning

12/15 Cotton clothes—washing

Area—20 ft.

Weight—41[illegible] lbs.

All steel body close type.

Complete with two $\frac{1}{2}$ H. P. Electric motor

Hydro extractor—starage tank, Electric heater, tools and instruction book

Rs. 1750/-

Working of both the machines mentioned above is the same.

Dry cleaning :—Brief process : Brush all the woollen garments throughly. Fill up the washer with petrol or other dry-cleaning solvent, as Trikoline, Napthaline, Tarpine etc. Put the woollen garments in the washer and put on the switch, and close the outer cover of the washer. Wait for 5 minutes, depending on the dirt of the garment. When you open the cover, you will find that your clothes are moving around in the cleaning solvent and the solvent is moving with spreed. When you see the solvent moving, you will also notice that it dissolves all dirt from the clothes. When this is complete, take out the clothes and put these in the hydro-extractor and put on the switch. You will notice that it moves with great speed at about 900/1200 R. P. M, and thus it squeezes out all solvent from the garment and leaves it in dry form. Take these out and spread it in the open for a few minutes, simply to deodorise the dirty smell of petrol or other dry cleaning solvent. Thus you will find that you dirty woolen suits are clean as new and then you press these and deliver them to your satisfied customers and start making money.

Washing : Brief process : The process is the same as in case of dry cleaning the only difference is that in place of petrol you are to put water and heat it by Electric heater. Put soap, and soda and then put the clothes in the water. When you see that all dirt have been removed, then open the tap, and put in fresh water and rinse twice or thrice. Then put a little starch and a little blue with water and again rinse. Then repeat in hydro-extractor and you will find you clothes damp dry. Spread the clothes in open air or sun for sometime and then start pressing. You will get very good result by this machine.

N. B. If you have any difficulty whatsoever, please refer to us, and we shall surely help you and train you fully.

Plastic Industry

This is a new industry in India, say, recently developed in ten years. Just see the tremendous progress it has made. Right from a small button, bigger types of trays, coat hangers, combs, tumblers soap cases are being produced, all with plastic. You can also make Bangles, switches, plugs, bottle tops, pencil, sharpeness, combs and tooth brushes. You can make thousand varieties of nice toys,—toys that please, and toys that teach. If you study this industry you will see the huge production entering our markets. Right from the big cities, you can see plastic goods even in the smallest village. If you can create some new design, or invent anything new, I can assure, you will make thousands of rupees, in this small industry.

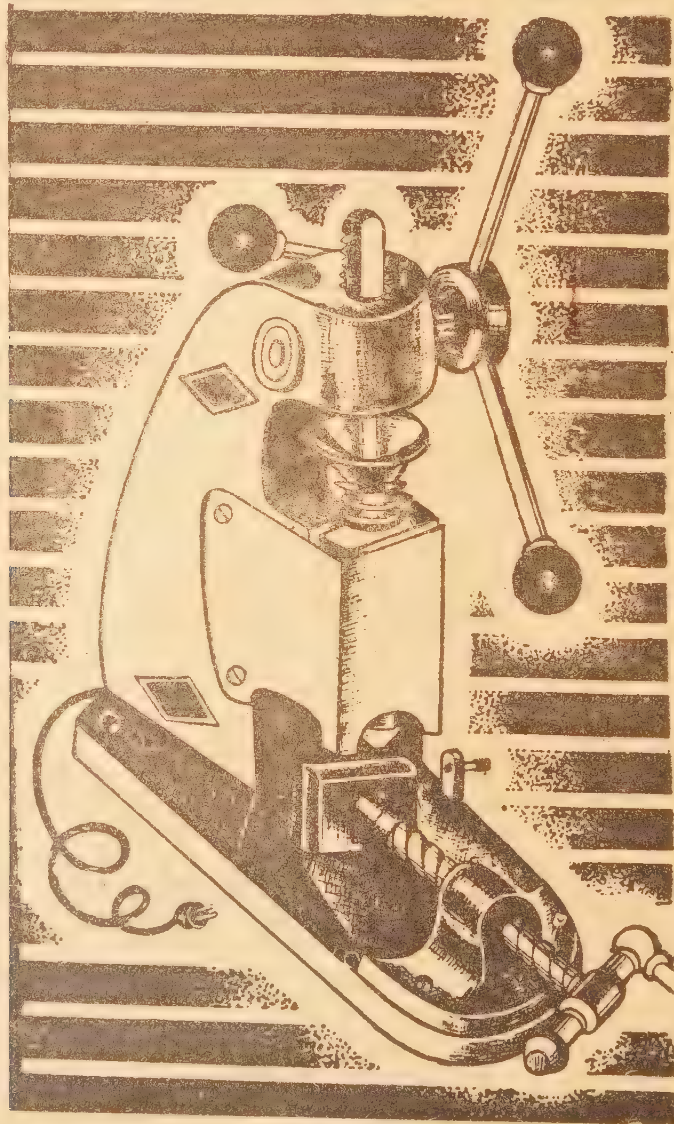
Made of : Strong Cast Iron and aluminum.

Operated : by hand

Size :	1/4 oz.	3/8 oz.	1/2 oz.	1 oz.
Price :	150/-	200/-	300/-	350/-

These machines would make Hair Pins, Clips, Safety Pins, Buttons, Ear Rings, Bangles, Small Containers, Combs and other varieties of plastic materials. This is an Industry which has developed in India very recently and persons availing this opportunity of plastic industry are making good profit by investing

small amount in the trade. The Machine can be used on cottage industry basis. The heating element mounted on the injection barrel may be heated by A.C./D.C. current from a plug point, where consumptiun of electricity is negligible. Raw materials can readily be had from the local market.



Moulding and dies for Plastic Goods

This purely depends on your definite samples and designs. The rates vary from Rs. 25/- to Rs. 250. It can be quoted against your requirements.

Plastics of all grades can be supplied in any quantity from our local dealers.

Production :—

Size	Daily out put	Watts
$\frac{1}{2}$ oz	5 to 6 gross	120
$\frac{1}{2}$,,	4 to 5 ,,	200
1 ,,	3/4 ,,	400

Working & Specifications.

PLASTIC IN ALL WALKS OF LIFE

It is a Hand-operated Injection Moulding Machine suitable for working Cellulose Acetate, Polystyrene P. V. C. and other similar Thermoplastics to manufacture Hair Pins, Clips, Bangles, Ash Trays, Pins, Toys, Utility Goods, Screwed Caps for Bottles, Phials, Electrical Goods, Buttons, Etc.

SPECIFICATIONS

Moulding Capacity	$\frac{1}{4}$ oz.
Piston diameter	5/8″.
Nozzle pressure	7500 lbs. per sq. ft.
Production rate	100 shots per hour
Heater Consumption	150 watts
Mould casting area	4 sq. inches
Body	Aluminum
Fitting	Steel, teeth & threads machined accurately

Height 14″, Length 12″, Width 7″, Weight 12 lbs.

According Double Size of $\frac{1}{2}$ oz. & till bigger for 10 oz. machine.

WORKING INSTRUCTIONS.

1. Plug the machine to electric current.
2. Put the plastic powder in the nozzle.
3. Wait for 10 minutes to ooze out the excess of matter at the tip of the nozzle.
4. Get the mould with its injection hole exactly under the nozzle centre.
5. Turn the handle.
6. Slip the mould out and eject the finished stuff.

———

Lead & Colour pencil making Industry

You should know that so far before the beginning of the Second World War, every type of pencils were being imported from abroad, and it was worth crores of rupees. It is just the start of Second World War, when a few people started this industry at Lahore, Delhi, Calcutta and Bombay, and now they are making heaps of profit, as by and by our Govt. is restricting furthur imports of all types of stationery goods. The consumption of every type of pencil is so great, that even if you install 100 big factories, in India, you cannot cope with the demend :—

The author has seen so many plants in Japan, was it was noticed that t his cannot be handled in a small type of machine of autcmetic nature, as there are many processes and many machines for each process, and each process takes its own time

Here we give a description of Emee pencil manufacturing plant.

Pencil Mfg. Plant

An ideal plant for cottage industries output 25 gross in 8 hours. It consists of 9 separate units.

1. *Lead grinding Roller* :—For fixing grinding lead to required specifications. 12″×9 C. I. Roller mounted on stand 18″ high 24″ long 24″ wide bed. Approximate weight 550 lbs. Belt-driven can be manufactured coupled with 2 H. P. Motor output, 40 lbs. lead in 8 hours.

2. *Lead Press* :—For manufacturing rods height 4′ width 2′, approximate weight not exceeding not 800 lbs. Belt-driven or handdriven output per 8 hours, Rods for 60 gross pencils.

3. *Circular saw* :—For cutting slits. It is mounted on a frame. Approximate weight 165 lbs.

4. *Groving and Rounding Machine* :—Height 4′ width 3′ length 3′, approximate weight 700 lbs. Belt-driven. Output per 8 hours 30 to 40 gross.

5. *Glue Press* :—For sanswitching pencil ; one press gives an output of 3 gross in 8 hours ; ten Resses are supplied with each plant.

6. *Sand Papering Machine* :—For polishing pencils. Weight 80 lbs. Belt-driven. Output

per 8 hours 16 gross in 6 hours. 2 to 3 machines are used in each plant.

7. *Paint Dipping Machine* :—For painting pencils.

It is mounted on a frame. Weight-driven Approximate weight 80 lbs. Output per 8 hours—100 gross pencils can be painted.

8. *End Cutter* :—For cutting ends of pencils. Height 2′ length 18″. Approximate weight 40 lbs. Out put per 8 hours. Belt-driven.

9. Stamping Machine for stamping name etc.

Height 18″ length 18″ width 9″ ; handoperated approximate weight 120 lbs.

Price—Rs. 9000/-,

Erection can be undertaken at extra cost,

2 Complete plants readily available.

POWER :—One engine of 8/10 H. P. is required for producing 25 gross Pencils, 50 gross Pen-Holders and 60 gross Scale Foot Rules.

BUILDING :—One shed of 20×′40′

RAW MATERIAL (For 25 gross Pencils) :—

1.	Grafite	...	6 lbs.
2.	Clay	...	12 "
3.	Glass paper	....	1 Doz.
4.	Wood	...	3½ C. F.
5.	Paints :—		
	Hacker Shellac	...	1/3 Gal
6.	Gold & Silver colour paper		1/3 "

"Pen Holder Mfg. Plant"

If you want to produce the office Pen Holders you will have to attach the following extra machines and the production would be 50 gross Pencils plus 30 gross Pen Holders daily (out of the Pen Holders 20 gross would be of superior quality and 10 gross inferior quality produced from the wastage of 20 gross superior quality Pen Holders).

MACHINES :—

1.	One drilling machine	Rs. 500/-
2.	One grinding machine (for shaping)	Rs. 1000/-
3.	Three presses (for making tips automatically)	Rs. 2000/-

RAW MATERIALS (For 30 gross Pen Holders) :—

1.	Wood	12 C. F.
2.	Tin plates for tips	6 plates of 18″ × 22″
3.	Sand paper	1 doz.
4.	Lacker paint	¼ gal.

"Foot Rules Mfg. Plant"

If you replace the stamping machine with a big printing machine, then you can print scale Foot Rules and the daily production would be 40 gross 12″ Foot Rules and 20 gross 6″ Foot Rules produced from the wastage of 12″ Foot Rules. This production is in addition to 50 gross Pencils and 30 gross Pen Holders.

MACHINE :—

One printing press 8″ × 12″ Rs. 2400/-

MATERIAL (for 40 gross Foot Rules) :—

1. Wood 21 C. F.

(a) Plants were Supplied to :— (PAKISTAN)

1. Mission Workshop, Mission Road, QUETTA, Baluchistan. ... 4 plants
2. Uttar Chand Rapur & Sons, Abbot Road, LAHORE ... 3 plants
3. Universal Trading Co., 5-Cooper Road, LAHORE ... 2 plants
4. Panj Darya Industries Ltd., D. Block. Model Town, LAHORE ... 2 plants
5. Atma & Co., Canal Park, LAHORE 1 plant
6. Setmar Industries, Ravi Rao, 3, LAHORE 1 plant
7. B. Gian Singo & Co., Ravi Road, LAHORE 1 plant

PEN HOLDER PLANTS **(PAKISTAN)**

1. Northern India Penholder Factory, Ravi Road, LAHORE ... 1 plant
2. Dr. Jai Singh & Sons, The Mall, LAHORE 2 plants

PENCIL PLANT **(INDIA)**

1. S. C, Chindramovli & Co., Hall Bazar, AMRITSAR .... 1 plant
2. Gapoo Sheshwa Mitra Pencil Co.. BAZADA 1 plant
3. S. K. Mitra, 12 Narkal Bagan, Sealdah, CALCUTTA ... 2 plants
4. Moon Light Industries, Najaf Garh Road, DELHI ... 2 plants

PEN HOLDER PLANTS **(INDIA)**

1. Deccan Pen Holder Factory, HYDRABAD

Printing & Stationery Industry

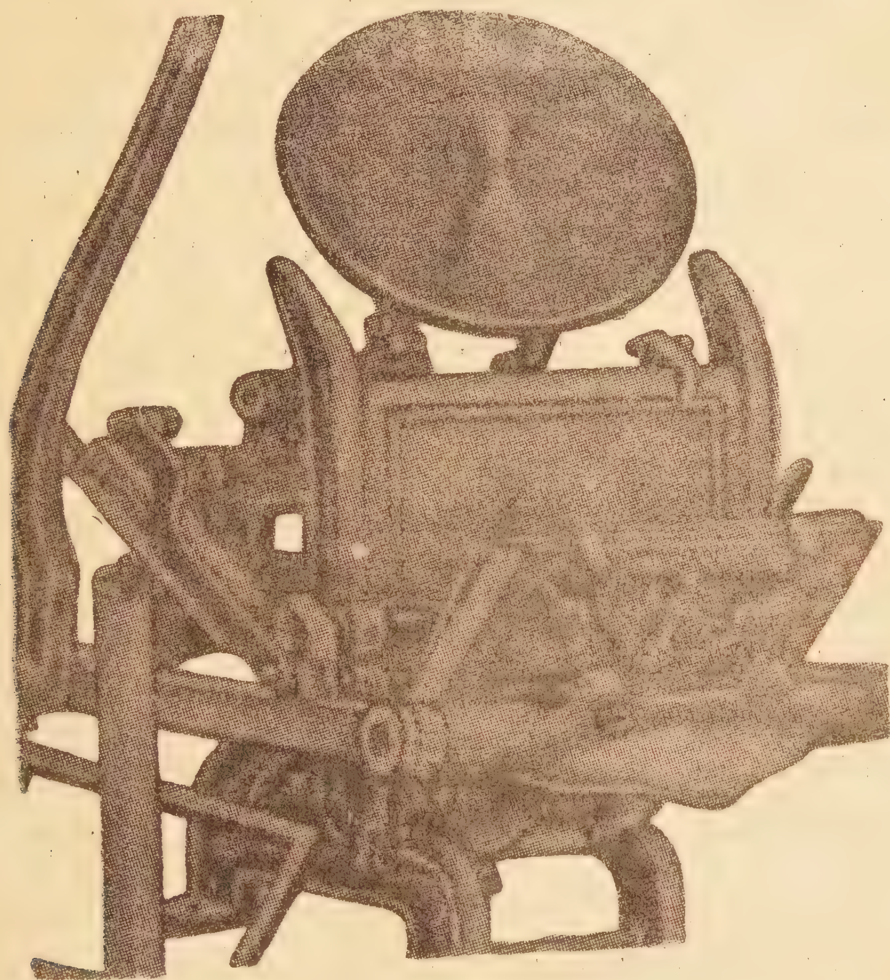
This Industry is a boon for the educated unemployed. You can start a small printing press with an investment of Rs. 500/- and start getting Rs. 200/250 a month very easily.

With this machine detailed below you can print Examination papers, Hand bills, visiting cards, Greeting cards, letter heads, Envelops, Post cards & tags and thousands other materials within the size 9″×8″. You can either print Greeting Cards, Tags, Envelops and important Hand bills and sell them in the market under your brand and style and be a printing and stationery manufacturer, or be a printer alone and print for Market, Colleges, Schools, Banks, Insurance Companies, Hotels and Clubs, etc.

Training and working :—For this line, few days' training is necessary, and so either you shall join some press, or install your machine and practise. You are to learn how to compose different words together, and fix them in a frame and make it ready for printing.

When you have learn the composing and setting the frame in the machine, put some ink paste on the round disc, then you should turn down the handle, and the rollers begin to move touching the disc where you have applied ink and the frame, where you have fixed composed type. Then you should move the handle across and you will get the printed impression on the paper or cloth, tin etc. you wish to print. Then repeat the

process and you can print about 400/500 impression per hour with this machine, which is hand of driven.



Specification :—

Weight approxinately	$1\frac{1}{2}$ cwto
Size of machine	$2' \times 1\frac{1}{2} \times 2'$
Size of frame	$9\frac{1}{2}'' \times 7\frac{1}{2}''$
Size of print obtained	$9'' \times 7''$
Impression per hour	400/500

Machines :—Made of Cast iron and steel through out. Strongly built to give you service for years.

Each machine is a complete unit containing the complete machine with rollers, disc, handle, 2 set of chases. known as frames, 10 lbs. type mixed varity, tools and instruction book.

The Safest Industry.

Hosiery Knitting Industry

Hosiery products are considered no longer a luxury. They are considered amongst the apparel requisites of man today. In India, besides upper classes, the middle classes of urban population have taken extensively to the use of cotton and wool hosiery. Even the servants of the upper classes wear socks, mufflers, pullovers, and banians, now-a-days. Socks and underwears form an important part of the stock in the shops of all the drapers and general merchants, in every town. Of late many hosiery factories have been started in this country, besides there being thousands of individual enterprises in this country. And the progress and achievements made by Indian companies are marvellous.

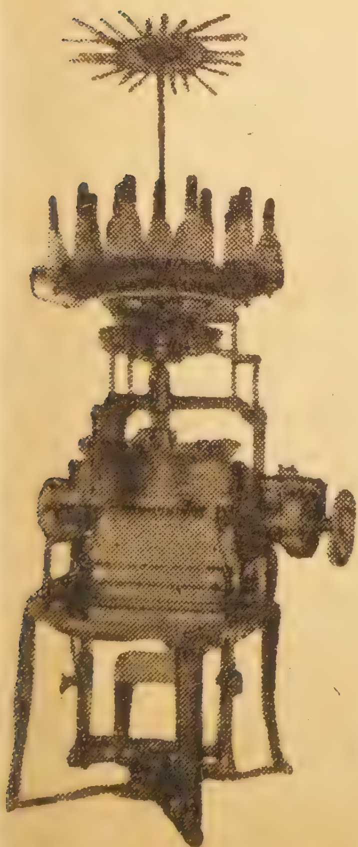
Excellent patterns of socks, stockings, mufflers, sweaters, jerseys, pullovers and banians have been introduced in the market of Indian made in all fabrics, cotton, silk, wool, artificial silk etc.

In India all hosiery factories are doing excellently and Still there is vast field that is lying before our industrialists in this line. Ahmedabad and Bengal are now vying with each other in the production of hosiery goods but still there is field, and with quality production with most up-to-date machinery having high and efficient performance, there is no reason why we should not be able to oust the whole of foreign competitors successfully.

The first place must go to Circular Knitting Machine, which produce banians underwears, jerseys, pullovers, etc. In producing these goods it is needless to say that all patterns and all sizes of goods are not possible to turn out from one single machine. Further no single machine can turn out a complete shirt or a banian. The size of the produced goods depends

mainly on the size of the machine, and the fine or coarse texture, on the number of needles used in the machine. The knitting machine itself turns out a circular or tubular piece of knitted cloth, like a loom. This piece of cloth has to be cut to sizes and made into required banian or under-shirt or the like. To produce a complete shirt, the following machines are necessary besides the Knitting Machine. Overlock Sewing Machine, Chain-Stitching Machine, a Rib Top Machine. The Overlock Sewing Machine and the Chain-Stitching Machine are used to stitch the different pieces together as also for stitching the rims. The Rib Top Machine is used to make the ribbed arm-pieces which are separately made and then stitched to the main body by the Overlock Sewing Machine. A Calender-ing Machine becomes a necessity if high class finished goods are to be produced.

The following estimate may be taken as a guide.



Estimate For a Small Factory

		Rs.	as.	p.
One Circular Knitting Machine.		2,800	0	0
One Overlock Sewing Machine		550	0	0
One Chain Stitching Machine		125	0	0
Two country-made Irons		8	0	0
Wooden Patterns	each	1	4	0

Excepting the Calendar Machine the above estimate is complete for a medium scale factory; far "banians" and under-shirts, &c. The output of the knittings machine depends on the quality of thread used yarn on 12/15 dozens of banians can be turned out from each of the knitting machines per day of 8 hours.

The Expenses

In calculating the expenses, the following items have to be recognised *viz.,* Establishment Charge, House rent, Breakage of needles (say Rs. 15 a month), Power, Oil, Grease, &c., Depreciation (at 10%), Cost of yarn, Cost of poplin and longcloth for lining, &c., Buttons, Packing and contingency charges.

In ihe income side, of course, it is from sale of the Produced goods alone.

Flat Knitting Machine

There are flat knitting machines, too, for turning out knitted fabric. But their output is rather small in comparison with the circular knitting machines.

Power

The consumption of power by hosiery machines is very small. Where electricity is available it is better to have electric motor, otherwise a kerosene oil engine or a crude oil Diesel Engine of cold-starting type is to be used.

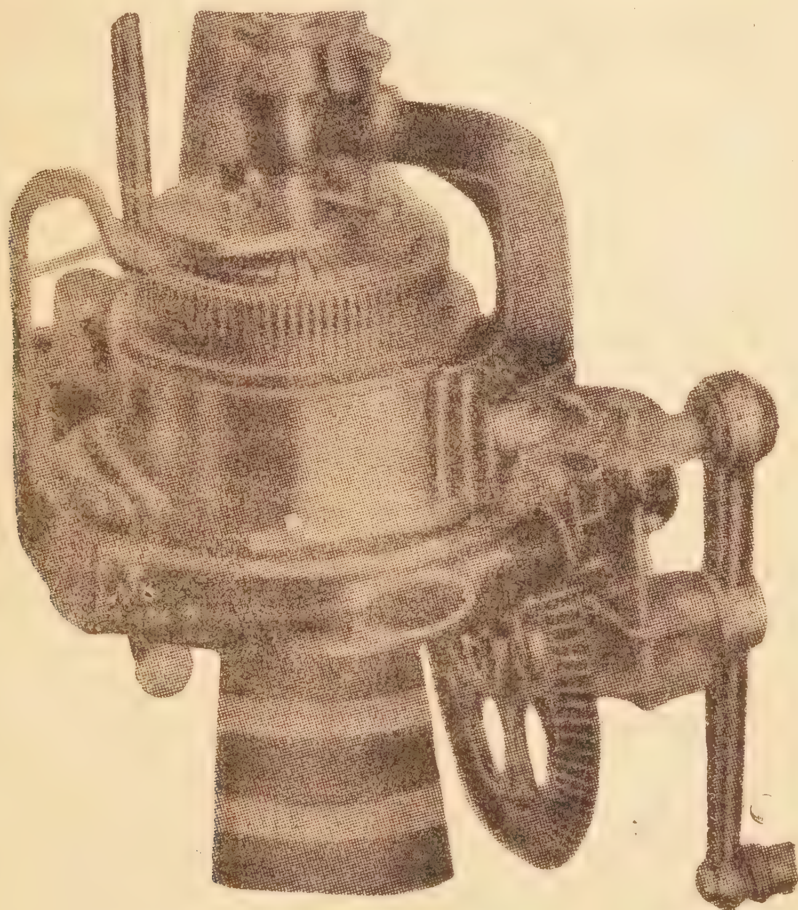
Hand Sock Making

Where capital is meagre of it is desired to run the business on co-operative basis, the hand sock making machines is better. They are very simple; girls, boys. widows can easily work them after training of a couple of days.

Hand sock making machine can be had with or without rib-dial and are made with or without design wheel.

If it is intended to do the business on home industry scale, it is better to take one Hand Sock Making Machine $3\frac{3}{4}''$ diameter with rib-dial attachment. This machine will produce socks

af adult size (9, $9\frac{1}{2}$, 10 and $10\frac{1}{2}$ market sizes) by using wooden patterns. The following cstimate may be taken as a guide :—



Account & Estimate

Hand Sock Making Machine with Rib-dial attachment $3\frac{3}{4}''$ Diameter	...	Rs. 160 0 0
Hand Winder	...	" 100 0 0
Wooden Patterns	....	" 25 0 0
Irons	...	" 5 0 0
		" 290 0 0

You can earn Rs. 100/- by one Machine.

Woollen Hosiery

The following estimate have been submitted to us by an expert for working hosiery factory for woolen pullovers,

sweaters, mufflers, etc., to be started with a capital ranging from Rs. 2,000 to Rs. 5,000.

Scheme with 2000/5000 Rupees Production 4/5 Doz Pulover.

		Rs.	As.	P.
One full jaquard circular machine	....	450	0	0
Ono Overlock	....	50	0	0
One rib machine	...	100	0	0
One Tape machine	...	200	0	0
Fitting and accessories	...	300	0	0
		1,100	0	0
Yarn about 20 lbs. per day	...	32	0	0
Wages " "	...	1	12	0
Winding charges 0-1-6 per lb.	...		10	0
Dyeing " 0-4-0 per lb.	....	5	0	0
Tailoring and finishing Rs. 2 per doz.	...	4	0	0
Labelling and Packing Re. 1 per doz.	...	2	0	0
Needles, depreciation and oiling Rs. 0-8-0 per doz.	...	1	0	0
		46	6	0
Sale price nett Rs. 30 per doz.	...	60	0	0
Cost per day	....	46	6	0
Saving per day	...	13	10	0
Over head charges 10%	...	1	5	9
Nett Profit daily	...	12	4	3
" " of one month of 25 days	...	806	10	3

Deducting Rs. 1,900 the cost of machinery out of Rs. 2000/5000, we have a balance of Rs. 3,100 which can serve for a period of 4 months yielding Rs. 1,200 only for that period i e. for a year.

Start independent Hosiery business on small or big scale. The following machines which we recommend.

HAND SOCKS & MUFFER MACHINES. (Harrison Type).

Gents Socks & Stockings—

$3\frac{3}{4}'' \times 108 \times 54$ OR $3\frac{3}{4}'' \times 120 \times 60$ @ Rs. 225/-

Artificial silk, cotton and Mercerised Socks—

$3\frac{3}{4}'' \times 132 \times 66$ OR $3\frac{3}{4}'' \times 160 \times 80$ 245/-

Military Socks & Stockings—

$4\frac{1}{2}'' \times 84 \times 42$ 210/-

$7\frac{1}{2}$ with two designing wheels, 4 feeders for MUFFLERS and UNDERWEARS 550/-

$7\frac{1}{2}''$ Matardana fabric for Slipover and Underwears 450/-

PRODUCTION.

Socks machines—4—5 dozens per day.

Muffer or Underwear fabric—about 20-25 lbs. per day.

POWER DRIVEN HOSIERY MACHINES—

Socks—Complete plant including five macnines for manufacturing socks of fine quality, Japan make. 8500/-

Banian or Underwear Machines of different diameters and gauges (Indian make, workingmanship' guaranteed) 185/- per inch.

„ of Japan make, brand new in original packing.

„ „ Non-sinkerbody machines. 2500/-

„ „ „ „ Sinkerbody Machines. 3750/-

„ „ „ „ Jalli Machines. 4500/-

PRODUCTION.

These machines can be driven with 1 H. P. motor and the production is 40-50 lbs. fabric per day. Machines are fitted with automatic stop-motions, and the working of the machines is very simple and easy.

YARN.

Yarn or these machines from 10s to 30s is freely available and can be supplied at the market rates.

CUTTING MACHINES.

After producing the Hosiery fabric with these machines, cut it according to your designs and sizes. It can cut 50 layers of fabric at a time. Electric driven, Japan make. 550/-

STITCHING MACHINES.

After cutting please stitch your products with these machines :—

Overlock Machines—"Singer make" Can stitch Upper and Lower partion and sleaves etc. production 80 dozens per day. 1250/-

,, ,, Japan make, production 65 dozens per day. 650/-

Chain Stitching Machines—"Singer make" for stitching neck. 350/-

ELECTRIC IRONS—

After stitching, finish your good for packing. 185/-

———

Candle, Chalks, Caryon, Lipstick Sealing Wax making Industries

Making of Candles, School or Tailors chalks, Lipsticks Sealing wax or Glycerine Suppository etc. are very simple, and these are gcod paying industries and the processes are so simple and easy that even a child can make.

All you are to do, is to mix the natural throughly of which you want to mould, use all contents according to the formula. After mixing put the material in the moulds and put the other mould on top of t, and serew light, on put some pressure. Lift the pressure, in screw, and you desired goods are ready. Keep in open for drying. Pack and put your brand and sell in the market. The following are the specification end prices, and each type of mould can be made to your definate size, shape and design, also with your name or trade mark. Moulds of bigger sizes what are detailed here can also be made.

Teach this industry to ladies, retired people and to students ; Raw materials available everywhere. If you want some definate formula for anything please write and we shall write you the details, and now we are quite confident you would adopt some of these industries and try to introduce in your localities.

Candle Moulds

Suitable for making candles of various sizes, fitted with thread fitting and rapid cooling device, accurately built, easy to work, highly finished, available in two types, viz.,

(1) Standard type, and

(2) Special type for easier handling and more production.

SPECIFICATIONS

TYPE (Standard or Special	5 or 6 oz.	7 or 8 oz.	10 oz. (a)	10 oz. (b)	12 oz. (a)	12 oz, (b	14 oz. (a)	14 oz. (b)	16 oz.
Size of Candle...	$\frac{11}{32}'' \times 4''$	$\frac{13}{32}'' \times 4\frac{1}{8}''$	$\frac{1}{2}'' \times 8''$	$\frac{11}{16}'' \times 9''$	$\frac{11}{16}'' \times 5''$	$\frac{11}{16}'' \times 10''$	$\frac{13}{16}'' \times 9''$	$\frac{3}{4}'' \times 10''$	$\frac{13}{16}'' \times 10''$
No. of Holes in Mould ...	50	50	25	25	25	25	25	25	25
Output per Hour ...	300	300	150	150	150	150	150	150	145
Packed in each Bundle ...	32 pc.	32 pc.	12 pc,	6 pc.	12 pc.	6 pc.	6 pc.	6 pc.	6 pc.
Wt. of such Bundle ...	6 oz.	7 or 8 oz	10 oz.	10 oz.	12 oz.	12 oz.	14 oz.	14 oz.	16 oz.
Candles used in	Dewali	Dewali	General use	General use	Hackney Carriage	General use	General use	General use	General use
Wt. each Mould (approx)	$1\frac{3}{4}$ cwt.	$1\frac{1}{2}$ cwt.	$2\frac{1}{2}$ cwt.	$2\frac{1}{2}$ cwt.	2 cwt.	$2\frac{1}{2}$ cwt.	3 cwt.	3 cwt.	$3\frac{1}{2}$ cwt.
Price (ex-godown) ...	Rs. 220/-	Rs. 225/-	Rs. 250/-	Rs. 300/-	Rs. 275/-	Rs. 310/-	Rs. 320/-	Rs. 325/-	Rs. 338/-

N. B. Rs. 15/- will be added on the above quoted prices for **Special Type Candle Moulds** of respective sizes.

Chalk, Lip-Stick, Crayon, Suppository Mould

(A) Chalk-Stick mould.

(1) Aluminium made 12 sticks at a time Rs. 98/-
24 sticks at a time Rs. 115/-

(2) Cast Iron made 12 sticks at a time Rs. 110/-
24 sticks at a time Rs. 125/-

(3) Brass made (nickelled) 12 sticks at a time Rs. 125/-
24 sticks at a time Rs. 150/-

(B) Crayon mould

Brass made (nickelled)
12 sticks at a time Rs. 125/-
24 sticks at a time Rs. 150/-

(C) Lip-Stick mould

Brass made (nickelled)
12 sticks at a time Rs. 75/-

(D) Glycerine Suppository mould

Brass made (nickelled)
12 pc. at a time
(1) Adult size Rs. 85/-
(2) Children size Rs. 75/-

(E) Sealing-Wax mould

complete with one hand punch for engraving, made of m.s. plate and bar (nickelled) 12 pc. at a time, cize 8″ long × $\frac{3}{8}$″sq. Rs. 95/-

N. B.—Moulds for making more sticks at a time can be made on order.

Safety Pin Manufacturing Industry

This is a very good Industry, and many people can get employment. This plant has also to be imported from Japan and we have the import licence and can import within 2/3 months. As the manufacture in Japan have such 7 plant ready.

Plant for manufacturing Safety pins.

I automatic wire cutting machine	...	Rs. 1,800/-
I " " Sharpening	....	Rs. 1,800/-
I " " Crank Press	....	Rs. 1,900/-
10 Hard Presses	...	Rs. 2000/-
5 Hard winding machines	...	Rs. 350/-
		Rs. 7,850/-

Make	Japan
Production	3500 per pes hour.
Net	3 maunds.
Area required	10′ × 15′.

Foreign imports have been banned, and such there is very good Scope, and there is very big market in India and abrood.

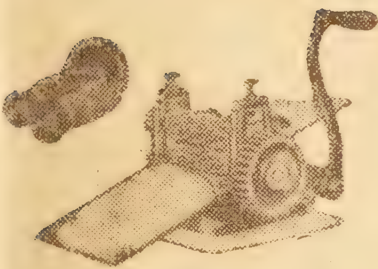
Lozanges and Drop Making Industry

Lozanges or drops making Industries. In only few years time this small industry has made tremendous progress .and the results are really marvellous.

Specification.

Machine with Rollers Complete with Plates and Guides

Size & Rollers Length.	Roller Die.	About Size	Weight Appro.
7″	$2\frac{1}{4}$″	15″×12″×24″	52. lbs
$5\frac{1}{8}$″	$3\frac{7}{8}$″	18″×12″×24″	72. 1bs.



Length	Die.	Single Gear Per Pair Rs.	As.	Weight
7″	$2\frac{1}{4}$″			25
$5\frac{1}{8}$″	$3\frac{7}{8}$″			40

All machines are made to Standard Gaugs of angle, so that various pattern Rollers can be used in one frame and they are so constructed that a pair of Rollers can be taken out and changed in one minute.

The Rollers are made out of Gunmetal aud Shaft of mild Steel and Rollers are interchargeable.

Designs can be engraved to any desired pattern, customers name or trade mark can bc engraved on rollers.

WORKING :—The warm and semihand sugar syrup has to be poured down over the highlypolished brass plate above and when the handle is turned, the lozenges, as designed will come out. Price 300/, complete unit with two engraved rollers.

Mosquito Net Making Industry

The use of mosquito net industry in grealy needed in India, but it require somewhat bigger investment, and so we are only giving you the machinary required for it and the prices there on. This plant has to be imported from Japan, and the time for importing would take 2/3 months.

Quotations for Mosquito Net Making Machine

F. O. B. Kobe

One Set **90″ Raschel Type High Speed Warp Knitting Machine :** £ 840/-

SPECIFICATIONS :

Knitting Width	90″
Gauge (Needles per inch)	18
Needle guide (cylinder)	single
Beam	4
Guide bar	2
Standard speed	180 r. p. m.
Kind cf Mesh	Pentagon, Hexagon.
Yarn used	20's—40's
Productio1	100 yds/day (8 h.)
Power required	3/4 H. P.
Net weight	1800 Kgs.
Gross weight	2200 Kgs.
Measurement (cft.)	470 cft.

ACCESSORIES AND PARTS :

(a)	Ratchet Needle	1620 pcs.
(b)	Thread guide	3240 pcs.
(c)	Moulds (Needle & Guide)	1 set
(d)	Plier spanner	1 pcs
(e)	Driver	1 pcs
(f)	Design chain (No. 1-No. 5)	200 pcs.
(g)	Change Gear (for changing mesh) 35T—45T.	each 1 set.
(h)	Chain Link Pins,	100 pcs.

SPARE PARTS :

(a)	Ratchet Needle	10% 162 pcs.
(b)	Needle Guide	10% 324 pcs.

One Set 90″ **Sectional Warping Machine** £ 231/-

SPECIFICATIONS :

Warping Width	90″
Capacity	200 lbs/8 h.
Pins	30 pcs.
Power required	1/4 H. P.
Net weight	550 Kgs
Gross weight	670 Kgs.
Measurement	67 cft.

Total £ 1071/-

N. B. Motors are not included in our price.

Shipment : from Japan in 2/3 months after the receipt of order.

World Famous Tool Kits

The small cost, the frequent usefulness, the time saving, the convenience gained, the improvements that can be made. the delays avoided, the independence achieved, the long life, and the saving of expense : for a sound investment on a small scale, a Nubo Tool Kit would be very difficult to equal.

All Tool Boxes are heavy 18 Gauge Steel, Stove Enamelled Red, Blue, Green or Grey.

May we draw your attention to the very substantial increase in the sale of Tool Kits in practically every market in the world, more than ten times the number are being sold now than before the war.

There are quite a number of sound reasons for this, varying in different markets, but in particular :

1, The high cost of labour is forcing people to do more work for themselves.

2. Shortage of labour frequently causes costly and irritating delays when relying on outside assistance.

3. The reduced spending power of almost everyone keeps people at home more, and many are buying a Tool Kit to keep themselves usefully and profitably employed.

4. Owing to war experience or general mechanical progress, a very much larger proportion of the general public, in fact everyone, has some mechanical ability, and can profitably use a Nubo Tool Kit.

Price Rs. 95/-

Delivery after 4 weeks.

Biscuit Making Machine

You would definately like to know and try, how these many varaties of biscuits are made and how. Well there are thousand ways and varaties. You take about 2 seers fine flour (Atta) Mix some Suji in it, put ¾ seer ghee ¾ seer milk one seer sugar 1 tola Bari ellachi four tola Badam and pesta one oz sodabicarb (known as Mitha soda) Mix all these very throughly, you may add few eggs if you like. When mixing is done, then spread this paste on table and press it flat by means of Rollers then cut the biscuits in different designs, shapes and put these in metal trays then put it in the heated evens and let it remain there for about 4/5 minutes. Take out and let these cool down and dry. Shake these a little and delicious biscuits are ready. There are two types of heating ovens one heate by electricty and the other by wooden coal, and both are ade locally everywhere. This machine complete with Rolling Machine and cutters (kneeding and mixing to be done by hand) P [illegible] - There is demand for this cottage industry every where. Instead of eating and selling dirty sweets and other eatables, it is always better to eat plenty of tasety and and healthy biscuits. There is 100% margine in this line.

Our machines are specially constructed for the biscuits of high quality and excellent finish. Machines are sized differently to suit the requirsments of classes of manufacture.

Biscuit Rolling Machine

The Machine is provided with two heavy perfectly smooth rollers. The gap between the rollers are adjusted by means of a wheel by turning which simultaneous lifting of the two bearings are performed so that there is uniform thickness of sheets of dough throughout the whole width. It is provided with a gauge to show the thickness of sheets.

No. Size of rollers Price 1. 23″×6″

Rs. 650/-

Kneading Mixing Machine

This mixer is of very latest type and will deal with practically all lines of fancy biscuits. The machine is so designed that the whole mass of dough quickly comes under the influence of the stirrers rotating in opposite directions and thereby keep no material unmixed. There is arrangement for tilting the trough to discharge the mixture.

Size No. 1 Capacity 100 lbs. Provided with
G. M. bearings
Rs. 905/-

Biscuit Cutting Machine

This machine has been specially designed for a moderate output, and is perfectly efficient in detail, It is fitted with the usual gauging rollers. The cross head for carrying the necessary cutters and the gear for separating the scrap from the cut biscuits together with panning mechanism for automatically depositing the biscuits on the baking trays. This is an inter-

mittent machine, size 18″×6″, and has a capacity of about 50 cuts per minuite.

Quotations for set of BISCUIT DIES including fitting charges on the plate are supplied on receipt of specifications or sketches.

Hand Biscuit Dies

(With Wooden Handle)

Rs. 45/- each

Chocolate, Toffe, or Caramel Machines

This machine with perfectly turned heavy and solid cast iron rollers are used with advantage for rubbing and grinding of pastly material.

This is equipped with three rollers, arranged at small adjustable distances apart, each roller running at a higher speed than the preceding one. Owing to the fact that each successive roller has a higher speed than the preceding one, the chocolate mass is stretched out as it is transferred from one roller to an other, and becomes thinner on each subsequent roll, by which means the thorough mixing and uniform distribution of the colouring matter and the perfume is principally attained.

The pulleys of this machine should be driven at about 250 r. p. m.

Three rollers 18″ long and 7″ diameter, powerfully geared, adjustment hand wheel, fast and loose pulleys and strap fork. Power required—3 H.P.

Price : Rs. 3800/-

Butter & Cream Making Equipment

The most simple and practical type of Butter & Cream Making equipment on the market. Better flavoured butter is obtained through the more efficient making and washing.

There are no moving parts in contact with the cream ; there are no greasing points. The butter is made by filtered air agitation—purely automatic and fool-proof.

Better quality granular butter is guaranteed, even when the equipment is operated by a novice. The butter still remains granular, even if the Machine is left running beyond churning time.

The butter grains can be efficiently washed without dismantling the equipment.

The brining operation is purely automatic—thus dispensing with the common method of working in the salt.

The Blanch-Electrix Butter & Cream Making equipment can be operated direct from the mains or from any house lighting plant. The equipment is light and easy to handle and very simple to clean.

Price Rs. 385/- complete outfit with electric motor apparatus. tool & guide book.

Guarantee one year.

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Making of Cotton form Rags and Waste Industry

(*Garabo Plant*)

MAKE YOUR CLOTH FROM RAGS & WASTE

This is the first time, when by the use of this machine you can turn out cotton, yarn and cloth from the rags and waste of used clothes, housing waste, yarn waste, and rags and cut pieces. These machine were first invented in Germany, then Japan copied, and now all the world over, people are using it. The first operation is dusting, remove and take out all dust. The next is Carding or opening, the leeps of waste is passed through the rollers, and the machines, tears, opens, mix Card, it in the form of fluffing cotton, it is again passed through the double action Carding machines, which has the same processes, but only it makes the waste, still finer, this is almost the loose cotton, which you require for spinning and weaving. The yarn available from this is quite good for durees, Carpets, Rings, and other hand loom purposes, and also for Coarse suiting and shirting, under our own supervision, we are getting this machine made, with the help of Japanse experts. This would prove useful. This wouid consist two Carding and opening machines only, as dusting can be done by simple beating on the perforated wooden platform. This plant would approximatly yield over 9 maunds of waste a day, and this is very encouraging and intresting, and is very profitable.

General Description :—The plant consists of two scutching machines, one opener and one carding and sliver making

machine. The rags and other waste material are thoroughly cleaned and put successively through the first and second scutching machines. After two operations the material is converted into cotton which is cleaned and opened by passing it through the opener. Finally the material is passed through the carding and sliver making machine. The latter produces slivers 10″ long and 2″ in diameter and weight one ounce each. The slivers are then ready for spinning.

Workshop shed :—Two separate rooms of size 50′ x 30′. Total space required—100′x30′.

Power :—One 15 H. P. motor for scutching machine, one 2 H. P. motor for sliver and carding machine and one 1 H. P. motor for the opener.

Raw materials :—Rags of all description e.g. tailors' cuttings, hosiery waste, waste from textile mills etc.

Output :—Scutching capacity 500 lbs. in 8 hours.

Price of machine :—Complete outfit including to Scutching machines, pullies and belts, but excluding motor is Rs. 7800/- Delivery after 2 months.

Beside this if you are instrested in inporting the origenal plant from Japan, the Same can also be inported and the brief particulars about the plant, prices, delivery period etc. Can be intimated to you.

ESTIMATE ON WASTE COTTON SPINNING PLANT

Production Capacity :—About 500/700 lbs. per day (8 hours) To be spun more than 6's in English Cotton System.

Manufacturers :—Katayama Iron Works Ltd., Japan.

SUMMARY OF PRICES

Schedule I :—Main Machinery $336221 0 0

Prices :—The above prices are nett F. O. B. Japan and are in U. S. Dollars.

Shipment :—Shipment of the above Plant can be effected within four months after receipt of your Letters of Credit.

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Ice Candy And Ice Creams Industry

It is not a new industry anymore but there is very big scope and it is quite profitable line. But before I give you the details about the machines etc., I wish to warn you, that you should try to use good and clean pure, water, sugar, juices etc., as anything unhygyenic means, thousands an ailments. You should be very particular about it. This Candy should be untouched by hand throught the process of manufacturing.

SPECIFICATIONS

Cabinet exterior is of asbestos cement sheets or masonite sheets or teakwood. All steel finish of the cabinet, spray painted with 'duco could be supplied at extra cost furnished on request.

Cabinet interior is fabricated of heavy guage steel with all joints tapped, rivetted, and welded for triple protection against leakage and rust. The inside of cabinet is further painted from inside with anti corrosive paint. Brine is quickly leveled by an overflow pipe.

Lid is of high grade wood protected with alluminium covering in-sulated and well gasketed for effective sealing.

Storage compartments are made from heavy guage steel and are provided with six aluminium trays for storage of ice candies in stacks . This eliminates iamming of candies and provides easy removal of ice candies.

Finish Exterior is finished in either asbestos sheets or masonite sheets or high grade teak wood. All steel finish, spray painted in Duco could be supplied at extra cost.

Insultation comprises of 4″ thick eork slabs hot-dipeed in asphalt. Thus the heat leakage losses are kept to a minimum which in turn saves operatings cost.

Evaporator coil is made from dehydrated seamless copper tube which is securely anchored to the interior of the master tank by a galvanized and welded steel rack. The rack is easily removable for inspection of evaporator coil.

Thermostatic Expansion Valve regulates flow of refrigerant to give proper refrigeration capacity at correct super heat at all times. It is mounted on the side of cabinet concealed in pocket.

Automatic temperature control switch is mounted in expansion valve pocket, and preset to maintain correct brine temperature for quick and efficient freezing of ice candies.

Brine Agitator is belt driven coupled with a ½ H. P. electric motor, placed in the bottom of master tank, The agitation of brine maintains uniform temperature in the candy tank.

Frick Condensing Unit used on these ice candy makers is of officient design. Twin cylidner compressor has a high volumetric efficiency, quiet in operation has long life, completely tested, washed and dehydrated. Pistons are from highest grade cast chrome-nickel iron, accurately- machined and balanced.

Connecting rods are from high quality drop forged steel with dense centrifugally cast babbitt bearing. Crank shaft is drop-forged from finiest quality steel, statically balanced with counter weights. Compressor seal is easily accessible, external revolving bellows and lubricated ring type. Splash system supplies lubrication to all bearings, seal and cylinyer wall. A supply of special refrigeration oil is charded into the compressor at the factory, The condensing unit motor is specially designed for refrigeration duty, with high starting torque and low power consumption. The motor is fitted with thermal overload protection. All the above features contribute towards long life and high efficiency of the unit.

Accessories Include brine agitator aluminium trays for storage of candies in storage compartments, ice candy moulds, calcium chloride for making brine, first charge of refrigerant and lubrication oil and lot tubing and fittings for installation of Ice Candy,

SUMMARY SPECIFICATIONS : BRECO ICE CANDY

MODEL	4 AR	6 AR
Frick refrigerating unit type	F-100	F-150
Frick refrigerating unit size	1 H. P. Air cooled	1½ H. P. Air cooled
Refrigerant	Freon-12	Freon-12
Freezing capacity per day	4,000	6,000
Storage Capacity	2500	3200
External length	70 inches	82 inches
External width	40 inches	40 inches
External height	34 inches	34 inches

*Data subject to change without notice

How a ice candy maker can yield better candies at lower cost

I. Freezes candies faster than old fashioned methods.

2. Freezes quickly to give shining candies.

3. Maintains correct temperature.

4. Reduces danger of "off flavours" resulting from improper freezing.

5. Eliminates objectionable taste resulting from improper freezing.

6. Saves work - no need to introduce ice and salt for freezing candies.

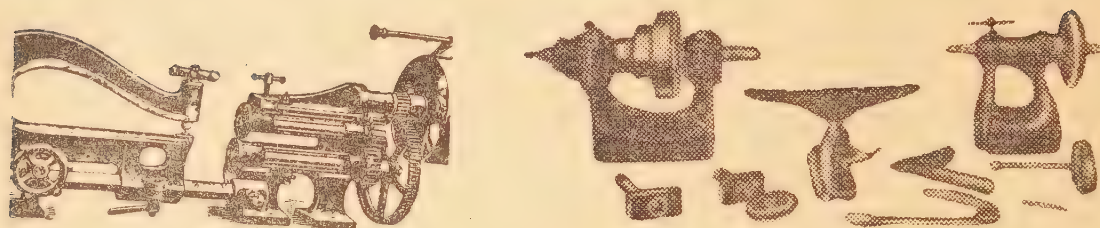
7. Saves time - Switch on the refrigerating unit which does the rest.

8. Saves money - thousands of candies in short-time.

Long Life

Throughout Ice Candy Maker are constructed of high quality. sturdy meterials to provide long life under heavy service. Heavy gauge steel for inner liner, sturdy floor grids, and many other quality construction features give Ice Candy Maker the kind of stamina a money maker must have. For instance, the refrigerant coils which line the cabinet interior are securely clamped in postition on a rigid, galvanised welded steel rack easily removable for service. Features like this mean long life and low maintenance expense. Rs. 1998/- ex Godown.

Buttons Making Industry



Millions and Millions buttons are used in our great Country daily and you see the scope for yourself there are buttons, made from plastics, bamboo, patotes, wood, mild steel plates, bones, Pearls, nuts, alminum sheets, brass sheets and many other item for different purposes. First you are to cut, make it round square or flat, give little finish, then ·punch holes, and polish and finish, this is all process the following machines would make any type of buttons for any purpose and from any material.

Circular Sawing Machine

With adjustable table, for cutting raw material into stripes or sheets ; Power reqd. $\frac{1}{4}$ H. P. ; R. P. M.—3000 ; Wt.—100 lbs. approx.

Blank Cutting Machine

For cutting out blanks (round discs) from stripes or cut-sheet. to pieces. Power reqd. $\frac{1}{4}$ H. P. ; R. P. M.—3000 ; Wt.—100 lbs. approx. Output—15 button disc per min.

Turning or Shaping Machine

For turning and shaping the front and back of the round discs—according to required designs, Power reqd. $\frac{1}{4}$ H. P. ; R. P. M.—2505 ; Wt.—125 lbs. approx. Output 15 buttons per min.

Drilling Machine

For making 2 or 4 holes at a time, in the shape buttons; semi-automatic. Power reqd. $\frac{1}{4}$ H. P. R. P. M.—2000 ; Wt. 60 lbs. approx. output.—15 buttons per min.

Polish Machine

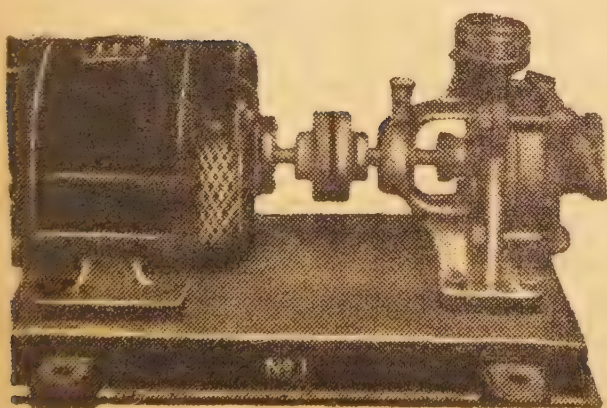
For polishing and Final finishing the buttons. Power reqd. $\frac{1}{4}$ H. P. R. P. M.—2000 ; Wt. 70 lbs. approx. Output—15 buttons per min.

Polishing, 2 Barrel Polishing machine may be used to get more production. Power reqd. $\frac{1}{4}$ H. P. ; R. P. M.—45 ; Output about 80 gross in 8 hours.

Complete set of machines with one complete set of tools. Rs. 1987/.

Water Pumping Sets

Centrifugal Ball Bearing Pumping Sets



Material used :—

Costing—Cast iron
Impeller—Bronze
Shaft—Steel
Bearings—Grease lubricated Ball Bearings at the driving end and water lubricated Bronze bearings.

SPECIFICATION AND PRICES

Pumps Branches	British made Motor R. P. M.	British made Motor B. H. P.	Output in Imperial Gallons against total head in feet: 40′	50′	60′	80′	100′	120′	140′	160′	180′	D. C. 110/230 440 volts. Rs.	A. C. Single phase 110/230 volts 50 cycles. Rs.	A. C. 3 phase 400/440 volts 50 cycles. Rs.
$1\frac{1}{2}''$	1	2850	2000	1700	1400	600	...	...	...	...	...	793	727	859
$1\frac{1}{2}''$	2	...	2000	1960	1900	1600	1300	660	...	...	...	1707	...	937
$1\frac{1}{4}''$	3	...	...	...	...	2000	1700	1500	1050	660	...	1807	....	1215
2″	2	...	4000	3650	3300	2650	1600	...	...	...	...	1692	...	992
2″	3	...	...	...	4000	3600	3300	2650	1800	...	...	1851	....	1258
2″	4	...	...	...	...	4000	3600	3400	3000	2600	1700	2397	...	1407

TOTAL FEET HEAD—Static Lift of Sunction plus Static Height of delivery plus Friction in pipes and fittings.

STARTING GEAR—Similar as for "D" type pumpsets overleaf.

The Price includes necessnry starting equipment.

DELIVERY—Within 2 weeks.

Last Figures of the pumps indicate stages.

Noodle Making Industries

Noodle Making Machine

Japan make. This is a novelty type of machine. Specially in these days of food shortage, flour, rice, dal, potatoes or any other estables to be mixed with water and make into a thick sapte and pass through this machine and it will cut all this into chips and when these are treated with butter, ghee or oils etc., and adding some sugar, salt or chillies to taste. It becomes delicious dish. It is very popular in foreign countries. The Price is Rs. 175/-. A novelty for stopping food wastages.

Method of Operation :

(1) Mix thoroughly ingredient into doughs.

(2) Turn both knobs left to the full till rolls open wide.

(3) Stuff ball dough into the machine. Press dough down with left hand and turn handle.

(4) Fold sheet of dough into two and put through machine again on the reverse side, and your noodles are ready.

You get 20 stripes of noodle in one operation and so the production is quite sufficient.

This is a good industry for all of us.

Specification :

Size :—1′×10″×1½″

Weight :—25 lbs packed.

Material :—Made of Cast iron and rollers of gun metal and stainless steel. Mounted on strong wooden platform.

Guarantee :—2 years.

Introduction :—This machine has a long history, say over 50 years. These machines have been officially approved as of "Superb" g. quality by the Commerce & Industry Ministery. Govt of Japan.

Price :—Rs. 175/-

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Skim milk dry powder Industry

This is the latest research done by the Indian Government Dairy Department, Indian Diary Research Institute, Bangalore.

This is entirely a new industry for India. All this time, all the powdered milk is being imported from abroad. There is very big scope for people, who puts the scheme in practice. Make the skimed milk into powder and pack in tins. Put your own trade mark and sell in the market.

Self explanatory sketch of the outfit for making skim milk dried powder

The charge of skim milk. not exceeding 20 lbs. at a time, is poured into the **karahi**, after getting the hearth in full glow. From the time of pouring of milk, the contents of the **karahi** are kept boiling and continuously stirred till a dough like consistency is reached. At this stage the damper is pushed in, and the mass worked up into a part and then removed.

The latter is passed through a sieve of 20 mesh, spread on the drying trays to form a thin layer and then kept inside the drying chamber (maintained at temperature not exceeding 120°F by manipulation of the chimney damper). When the particles have dried, they are removed and ground into a powder in a stone **chakki.** By passing the latter through a sieve of 40 mesh, two grades, one fine and the other coarse, can be obtained.

The powder so obtained will be **insoluble in water and as such cannot be reconstituted back into milk.** It may show a slight browning of colour.

The fine grade of the powder can be incorporated in chapatties, biscuits and toffees. It can be used in the mix for ice-cream. Mixed with a proper proportion of water and butterfat of vanaspati (powder : water : fat=10 : 4 : 3), it can be reconstituted into whole milk **khoa**, which can be utilized for sweet-poeparation in the usual way. The coarse grade of of powder can be mixed with its own weight of **suji** in the making of **halwa.**

This is condensing-cum-drying outfit can be erected at a cost of about Rs. 700/-. The cost of production, after taking into account the interest on capital, depreciation on the outfit, fuel consumption, labour charges etc , should work out to be about Rs. 0-2-6 (two annas & six pies) per lb. of powdeaed product made. To this, of course, the cost of the raw material (skim milk) if any, must be added,

In an outfit ot the specifications given in the sketch it is possible to handle a total of 100 lbs. of skim milk to produce 10 lbs. of skim milk powder by working 8 hours a day.

Particulars of an outfit for dry powders

(a) Chimney for flue.

(b) Dry Cabinet size 36″ × 14″ × 18″

(c) Damper knob

(d) M. S. Bracket.

(e) Cog wheel gears for stirrer.

(f) Handle.

(g) Coupling joint.

(h) Stirring Rod.

(i) Metal Blades.

(j) Damper.

(k) Fire grate.

(l) Ash pit.

Mixing Industry

A Universal General Purpose Machine for grinding, mixing, choping, blending, whipping, puring etc.

BRAUN MULTIMIX

(Made in Germany)

The 12,000. rev. p. minute electric **General Purpose Machine** for the smallest kitchenette or the biggest hotel kitchen-for cafes, confectioners, pharmacies, hospitals, drug stores, bars...**for everybody.**

MULTIMIX—classed with the miracle machines which millons of people find indispensable in countries with high living standards.

The utmost in modern equipment : Super-speed motor to be used with any kind of current two different speeds hygine, easy-to-clean screw glass-bowl special rust-proof biades.



Grinds, mixes, chops, purees, blends, creams, whips stirs for everybody, housewives, gourmets, sick and aged persons, babies and children !

Means far-reaching changes in your kitchen work and living habits.

Offers never-dreamt-of tasty and healthy improvements of your daily diet.

Improves your menue by innuberable novel dishes.

Serves as a miracle cook and kitchen maid, nurse, laboratory assistant, and bar tender.

Protects your health for :

Presents you with valuable fresh and uncooked diets prepared in a manner to suit the most pretentious palate and the most touchy digestions.

Combines in one unit : mincer, agitator, grater, cream beater butter churner, coffee grinder, passing machine, blender, mincing knife, twirler, puring machine, cocktail shaker, almord chopper.

MULTIMIX is unparalleled in every respect !

Price :—Rs. 289/- Complete with Motor, Plugs and instructions.

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Drilling Polishjng & Sanding Industry

THE ELECTRIX "HANDYMAN"

The Light Industrial Sanding, Polishing & Drilling Machine —A Universal Tool.

Essential in the garage.

Invaluable in the factory.

Indispensable for all drilling and polishing operations.

BRIEF SPECIFICATIONS
OF THE ELECTRIX "HANDYMAN"

The Electrix "Handyman" weighs only 8 lbs., is portable, and can be operated easily with one hand. A secondary handle fits snugly to the contours of the machine when not required, but can be opened out leverwise to two positions at operator's discretion.

The alternative heads are easily attached by turning clockwise and can be interchaned in a matter of Seconds, removal requiring only a short turn anti-clockwise.

The Electrix "Handyman" has a specially designed motor of robust construction, is extremely reliable. compact and light in weight. It operates on either AC or DC mains. A special feature is the incorporation of a radio supressor within the machine. A thumb operated 'ON-OFF' switch is fitted.

The standard equipment consists of three heads (a) Sander, (b) Lambs wool polisher, (c) Felt pad for applying polish. The polisher heads are specially designed to allow the polisher to be used on the irregular surfaces of all types of furniture, the heads being pliable.

Used for polishing CARS the Electrix "Handyman" will produce a polished surface of exceptional brilliance, and in a much shorter time than by old fashioned methods.

In the HOME, furniture of all types will be given new beauty.

For CARPENTERS, METAL WORKERS and DECORATORS, time taken in sanding of wood and/or metal for painting is reduced considerably. and the resultant surfaces are so smooth that subsequent work on them is easier.

The

Electrix "Handyman"

the

all purpose machine

of a 101 uses.

Price :—Rs. 220/-

— —

FILMON

A latest invention, a stir in music instruments. Japan make. Play a continuous reel of 40 gramophone records on an endless belt. All this is automatic. This can be used on any current of any volts. It is a complete and compact unit, housed in a beautiful leather rexine. Complete with the apparatus, motor, core plug, sound box and two sets of endless sound belts and guide book.

Size—$1\frac{1}{2}' \times I\frac{1}{4}'' \times 1'$

Weight—32 lbs.

This appratus is cheaper than gramophones, as the music yon listen, is such better and the tare out of film is negligable, as compared to gramophone records and needles. It is better than radio, that you can hear the endless music of your choice anytime and as long working. You put on the switch, the endless belt containing music moves round in such a way that it turns back, again and again, as if it is endless belt. Then you place the sound box on it and hear the music. The music volume is adjustable by the regulator. It is strongly built and will give you trouble free service for many years. You can raise the sound volume, as much as you hear the loud speaker. This is an asset and more useful for clubs, hotels, cabret houses, churches, schools, Educational Centres, and Modern Societies.

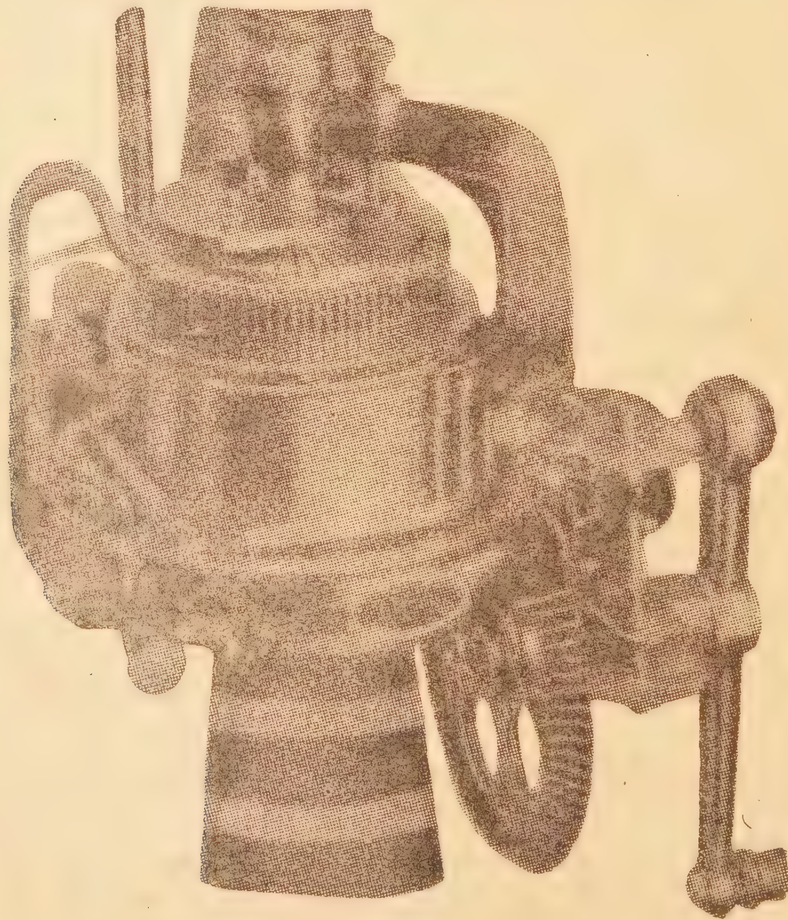
Price :—Rs. 350/- the original price for this apparatus is Rs. 875/-, but this offer is made by the manufacturers, so as to make it more popular in India.

Gas Mantals Making Industry

This is the first time, that there are made in India & more especially on a small scale.

This machine is exactly like sock making machine & the working is exactly the same.

Size of the cylinder	$2\frac{1}{2} \times 72 \times 36$.	
Weight	36 lbs.	
Production	20 Doz.	Price Rs. 260/-
Yarn used	Pure silk or Art silk of 120, 150 D.	



These require good needles costing about Rs 200/- per 1000.

When these are knitted you are to remove the fatty impurities by treating it with mild soda ash or soda caustic & then rinse it Throughly 4 times in clean water & then treat it with dilute acid, Then again wast it once more.

The long cylinder of fabric then to be cut into pieces, but note that your hands & your cutting dice should be clean.

Then dip the mantals in the solution of 1% thorium Salt & 1% cerium. Dip only for few minutes.

The next stage is fixing. It is further treated in solution of aluminium nitrate, borax or calcium Nitrates & in this way extra mineral matter is deposited at the weak spots, thus forming a stronger skeleton.

Branding the maker's name upon the mantle is accomplished by taking advantage of the face that "didymium" salts decrease the luminosity of the thorium mixture. A solution of "didyminm" nitrate is employed for the inscription which becomes visible as dark lettering on the bright ground of the mantle when in use,

Burning, Collodionising, And Testing

The mantles are now ready for the last steps in the process. They are shaped on wooden models and are then subjected to the action of Bunsen burners which "burn off" all the original organic material from the mantle. The heating is begun at the closed ends of the mantles, as otherwise the contraction of this fibre under the heat would distort the shape of the fabric. These first stage in heating leaves the mantle a mere fragile structure ; and in order to toughen it, high-pressure burners are brought into play which conslidate the more fusible oxides in the mantle and render the whole mass more resistant.

It is next necessary to provide some support for the ash skeleton so that it may stand the shocks of transport. This is provided by the collodionising process. In groups of forty to sixty' the mantles are dipped into a mixture of nitrocellulose and various oils. The cils are added to reduce the repadity of combustion of the nitro-cellulose. The dipping is done by machinery ; and the mantles are then dried in ovens heated by high-pressure steam. When dry, they are trimmed in a machine and are then ready for packing.

Radio Aerial (indoor) & Electric wire clip making Industries

You should know, that in India. the production & assembling of Radio sets have increased tremendously & I can forecast that in the coming five years, it would compete the world market. As may radios are sold or made, so many aerials are needed & so naturally there is a good scope for it. The following are the details of the machine.



This machine is exactly like hand socks making machine, & works in the same manner. You pass 3 copper wire through the needles of the machine, and go on turning the handle, with any speed you like and you will get the cylindrical type of knitted wire net. You cut it according to your required length. Both of the ends of the cut nett, may be tightened with screwing it with a piece of hard wood small piece or a masmite or compressed plywood. Then on both the ends on the wooden piece makes small holes & fix up ordinary type of spring for tying and on one side fix up. A covered wire of about 10′ and your indoor aerial is complete. You make nice cardboard or paper boxes, print your firms name and sell in the market.

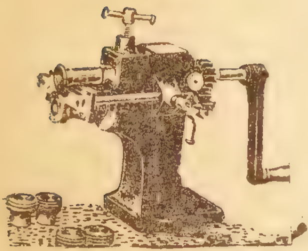
Specification—

Size of cylinder	$2\frac{1}{2}'' \times 72 \times 36$ or $2\frac{1}{2} \times 96 \times 48$
Weight	Approximately 32 lbs.
Type of needles used	84+136
Price	Rs. 220/-
price of needles	Rs. 75/- per thousand.
Production	250 fit length.

Machine is complete with weight, stand, and guide book.

———

Wire Cljp making Machine Industry



All these clips, which are so simple to manufacture were imported, but during the II world war, these were manufactured in India, and so many small factories have been started.

The process is, that you make a die of the clip. Use a hand fly press. Turn handle and press your clip from the tin is cut and your clip is ready. In Japan I have seen, that instead of using new tin, they make from the waste tin or used empty tin boxes. So there is still greater chance by using waste tin. Same machine is also suitable for making crown corks for soda bottles, only you are to change the die.

Price of the machine Rs. 210/-

Die making Rs. 175/-

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Grinding Mills Rice Polishing
&
Dal Industries

We need not write the importance, necessity and usefulness of these industries. All these are in daily use. All these Industries are quite suitable in villages and in big cities where new colony have been constructed. This industry is very suitable for retired people, because all these industries require only control, and rest of the work is done automatically by power, and the manual work is done by ordinary labour. Below we give some details of many machines made by ages. Beecol Industrial Machinary Co. and we are quite confident, that you would introduce these industries in your localities. All these machines an supplied under guarrantee.

All BEECOL Machines posses the following special features :—

1. Only the best available materials are used in their manufacture.

2. Qualified and experienced engineers supervise their manufacture.

3. Special attention is paid towards machanising, fitting and finishing.

4. All machines are tested prior to despatch from the factory.

5. These machines give maximum output with the minimum consumption of power.

6. These are simple in design and unrivalled in smooth working.

7. Their spare parts are always available with us, which factor eliminates chances of breakdowns and ensures continuous working of these machines with equal efficiency.

8. Wear and tear of parts is comparatively less, resulting in lower maintenance costs.

9. Uniformity in quality and design of these machines is assured.

10. Machines are well packed before despatch ensuring safe arrival at destination,

Therefore when you buy "BEECOL" machines you are sure you are getting full value in return of the prices paid by yon.

DANISH TYPE

GRINDING MILL VERTICAL

This grinding Mill is ideally suitable for grinding Wheat, Barely, and Maize etc. The fineness of the flour can be regulated without injuring the stones. This Mill is supplied with duss-proof ball bearings and stones made of flint and emery composition. Its speciality is more output with less power consumption.

SPECIFICATIONS

Dia. of stone	Size of Pulley	Speed (R.P.M.)	BHP reqd.	Output per hour	Rs.
12″	10″×4″	700	5-6	3-4 mds.	310/-
16″	12″×4″	600	8-10	5-6 mds.	355/-
20″	16″×4″	550	10-12	7-8 mds.	500/-

RICE HULLERS

This is meant for hulling either raw or par-boiled paddy to rice with minimum breakage and for producing white rice without polish. This machine is ideally suitable for villages and small towns where polished rice is not in demand.

It is as smooth in performance as it is sturdy in appearance. Its superiority over other bands of hullers is undisputed.

SPECIFICATIONS

Size of Machine	Size of Pulley	Speed (RPM)	BHP reqd.	Output Raw paddy per 10 hours.	Output shelled Paddy per 10 hours.	Rs.
No. 2	14″×7″	850	13	100 mds.	200	140/-
No, 4	8″×4″	900	7	60 mds	120	100/-
No. 8	10″×5″	950	10	90 mds.	180	140/-

RICE HULLER & POLISHER COMBINED

This is a combined unit of Huller and Polisher for producing fine, polished table rice in one continuous process from raw or par-boiled paddy.

SPECIFICATIONS

Size of Machine	Size of Pulley	Speed (R.P.M.)	BHP reqd.	Output Raw paddy per hour.	Output shelled paddy per hour.	Rs.
No. 1	16"×8"	500	15	15 mds.	20 mds.	300/-
No. 3	14"×6"	700	9	7 mds.	10 mds.	220/-
No. 7	12"×5"	600	11	10 mds.	15 mds,	280/-

DAL MACHINE

This machine has wooden frame and runs on ball bearings. It is ideally suitable for making Dal of Massor, Moonge Mote and Arhar and all other similar cereals.

BEECOL Dal Mill is of simplest machanism and ensures highest efficiency.

SPECIFICATIONS

No.	Size.	BHP reqd.	SPEED (R, P. M.)			Output per hr.	Rs.
			Massoor	Moong	Arhar		
1	14"×32"	15	650	900	900	15 mds.	950/-
2	13"×10"×32"	12	650	900	900	12 mds.	752/-
3	12"×10"×24"	10	650	900	900	9 mds.	650/-
4	10"×30"	9	650	900	900	8 mds	600/-

BENGAL TYPE OIL GHANNY

These Kolhoos (Ghanies) are meant for crushing practically all kinds of Oil Seeds and are fit for continous working. The output of oil given below is approximate and depends mainly on the quality of seeds.

This type of Ghanies are supplied in pairs and are available in two varieties—one with springs and the other with weights.

SPECIFICATIONS

Type	Size of Pulley	BHP reqd.	Capacity per charge per pair.	Time required per charge without expeller	Time required per charge with Expeller	Rs.
Spring type	18″×4″	3-4	20 seers.	45 minutes	25 minuses	750/-
Weight type	18″×4″	3-4	20 seers.	45 minutes	25 minutes	

BAND SAW

BEECOL Bandsaw is manufactured out of best material and as such, is very rigid in construction. attractive in outlook and smooth running in performance—these are the qualities which make it popular in the market.

It is fitted with best quality ball bearings and is an ideal machine for all wood sawing purposes.

SPECIFICATIONS

	42″ size.	36″ 8ize
Size of table	42″×42″	36″×36″
Thickness of table	$2\frac{1}{2}$″	2″
Face of Pulley	$2\frac{1}{2}$″	2″
Maximum cut	25″	20″
Size of Pulley	36″	36″
Length of saw blades	21ft	21ft
Height of table	40″	36″
Overall height	106″	100″
Approx. H.P. required	15	12
R. P. M.	360—500	350—500
Weight	35 Mds.	44 Mds.
	Rs. 2250/-	Rs. 1890

CENTRIFUGAL PUMPS

An ideal water pumping unit fcr agricultural and other purposes. This machine is fitted with detachable side suction flanges. loose and fast pulleys aud belt shifter. Best Sweden make ball bearings lubricated by means of grease cups are used in this machine.

Output of 4″×4″ Beecol Centrifugal Pump at Different Heads & RPM

R. P. M.		*TOTAL HEAD IN FEET* 20	40	60	80	100
240	RPM	1000	1400	1725	1950	2150
	BHP	3	4	5	8	10
280	RPM	1100	1450	1750	2000	2190
	BHP	3½	5	5½	9	11
320	RPM	1250	1525	1840	2050	2200
	BHP	4	6	8	10	13½
350	RPM	1425	1685	1905	2100	2250
	BHP	5	7	9½	11	14
400	RPM	1600	1800	2000	2180	2300
	BHP	6	8	10	13½	16

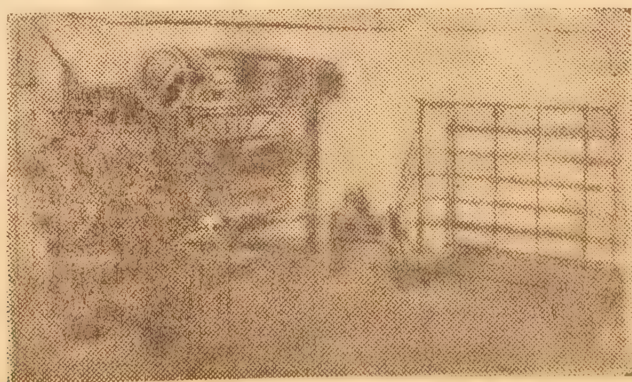
Rs. 305/- for 4″×4″

Rs. 250/- „ 3″×3″

Advertising Tape making Industry

This is entirely new Cottage Industry, and can be well handled by our man and many people can be employed in this line. This industry is very common in foriegn countries. This tape is known as advertising tape, because on this tape, is printed the name, address, and the particulars of the firm, and when these firm pack the goods, they use this tape instead of of string, sutlion twice, this gives good impression, at the same type it gives good look to the packing and you can see the name of the firm and thus the utlity of this country is greatly felt. This tape is being used by all gereral stores, shops, commercial houses and can be brought to thousand other ways in packing.

Raw materials :—Cotton, Silken, art silk, the metalic wire, in rubber threads. (you can use any of this singly or combined) and glue. Below we give the brief description about the make, other details of the machine, working, method and speciftion.



This machine manufactured by German experts with experience of several decades is suitable for producing advertising tape upto a width of about $\frac{1}{8}''$ to $\frac{1}{2}''$.

The bobbin-frame can take 48 spools from which the threads can be drawn overhead with same tension, no matter whether the bobbin is full or empty which is most essential for attaining uniform width of the tape. Furthermore the requirement of the tension of the threads is reduced to the minium by which chances of breakage of threads are minimized.

Upon request, the bobbin-frame can also be supplied with an electrical stop-motion installation whereby the breakage or running out of a thread is at once shown by the respective red lamp. As each row of spools has different lamp·colour the thread in question could be easily found.

The threads are guided over by glass-sticks, a reed and a porcelain immersion to the gelatinixing apparatus. The surplus quantity of the glue gets squeezed through two gummed hollow rollers which are uuder spring-pressure to be regulated. The copper glue box stands in a copper water tough in which an electrical multibular heater of 400 Watt capacity is built.

The drying and transport rollers in the drying machine run in ball bearings. The drying of the tape is increased by 6 fans which are built inside the drying roller and also run in ball bearings. The transport of the tape is regulated by slanting the transport roller by means of a hand-wheel.

A strong ironing calender with 3 heavy rollers of gunmelal are built into the machine which stands under spring-pressure to be regulated. The calander is driven by a belt pulley and friction coupling. The proportion of speed between the calender and the transport roller can be regulated by an expanding belt pulley.

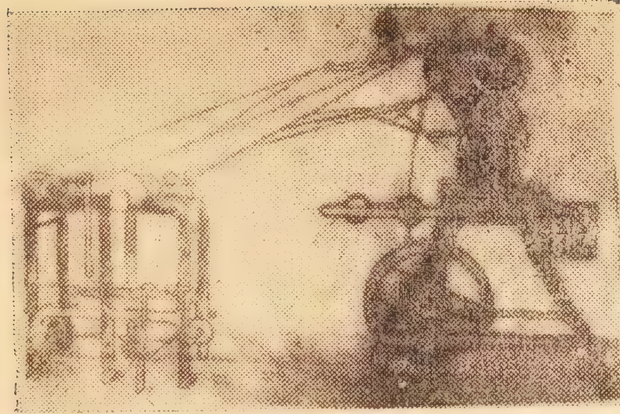
A winding machine is built in front of the calender and driven by same. It can be supplied for winding intermediate

large spools or marketable spools. The thread guide of this machine durjng the motion is on its side and can be regulated exactly in the throw of the crank.

Power required about	...	0·4KW
Capacity about	....	3500 M/Hr
Floor space required	...	4 m x $3\frac{1}{2}$ m
Weight : net about	....	620 Kg, Gross 800 Kg.
Price	...	Rs. 6800/-

This machine produces tape from $\frac{1}{8}''$ to $\frac{1}{2}''$ width and 3800 yds. per hour. This machine is complete and compressing a bobbine frame to take 48 bobbins frem which the yarm is passed through a gelatinzing appratus and then passover the drying machine and then would on spool complete guide book, and equipment and spools.

Price Rs. 6800/-. Delivery 4/6 weeks.



Ribbon & Tapes printing Industries

What has been described above, regarding tapes & ribbons, this machine is important for printing the same on autometic system.

Details are as follows :—

This is an ideal machine for printing labels on ribbons or for printing advertising tapes. It is manufactured by German manufacturers of many years' experience.

The machine prints two ribbons at one time. The two type rings are changeable and can bc installed for gunmetal types or hard rubber blocks as may be desired and the maxium length of printing is about 490 mm ($19\frac{1}{2}''$).

The colour feed can be regulated and the colour is carried over 3 distributing rollers, to the types. The last roller makes length movement which ensures not only better inking but also longer life for the rollers.

All shafts are connected through milled tooth wheels. The pressure roller is covered with India rubber and adjustable, so that, a good pressure of the ribbon to the types can be attained.

The winding off installation can be built as desire for large intermediate spools or for saleable spools. Two dial indicators show exactly the length printed, in meters.

On a rolling machine with 2 bears, which is built in front of the printing machine and driven by same, the ready ribbons are wound directly on marketable spools. Each spindle of the machine works separately of the others. The thread guide of the machine during the motion is on its side and can be regulated exactly in the throw of the crank.

Power required about	...	...	0.6 HP.
Capacity about	...	...	7500m per hour.
Weight net about	...	...	265 Kg. gross 420 Kg.
Price ...	...	...	Rs. 3850/-

Delivery—4/6 weeks.

Toys Manufacturing

Manufacturing toys, that teaches,
,, ,, ,, pleases,
,, ,, ,, sells

and then see how you income multiply. You may be thinking that is a small industry with a limited scope, there is very big future for this industry and many types of toys can made, such as making toys from clay or porcelain, making from plastic, making from wood. mechanical toys, cotton waste, leather, rubber, cellolied etc., The great beauty in this line is that you can make toys on any scale you like, from one man show, to a bigger factory employing 100 workers. In your spare hours, and the spare time of your family members can all be utilised in this trade, and as such there is a good scope for this line.

Here we give some details of each type.

(a) Porecelain, or clay.

Porcelain or Clay Toy Making Machines

1. Horizontal Mixer.

It mixes the ingrcdients throughly into rough form by means of two vertically fixed beaters which rotate inside the mixing vat at a great speed.

Capacity of vat 2 mds. Power required 10 B,H.P. Floor space covered 3′ 4′.

Prlce ... ... Rs. 1,250/-

2. Slab and Size Cutting Machine.

A hand driven machine which cuts the mixed dough to required size suitable for punching.

Price ... ... Rs. 125/-

3. Punching Press.

This is a specially designed foot press fitted with automatic lifter. Any size ot toy or doll up to 12″ long and 4″ wide can be punched by this machine. There is dice holding arrangement of the bottom surface and any dice can be fitted there with for making dolls of diflerent shape.

Output 600 per hour. Floor space covered 3′×3′.

Price .... Rs. 750/-

Mechanical Toy Manufacturing





There is a vast scope for meehanical toy industry in our country. Manufacture oi these toys require skill and knowledge in mechanical fitting. Japan supplies complete plant for

manufacturing there toys at a f.o.b, price of Rs. 17,00/- whereas we have been successful in arranging a complete range of machine tools required for this industry at a much lesser cost.

The following machine tools and dices are required for starting a mechanical toy industry :—

1.	Bench miller	Rs. 1,250/-
2	Bench Lathe	Rs. 450/-
3.	Ball Press No. 5.	Rs. 350/-
4.	Hydraulic pressure, Plastic compression moulding machine 20 ton pressure capacity	Rs. 2,150/-
5.	Complete diceset for chasis, penions, gears, cam, body, etc. ...	Rs. 2,000/-
6.	One drilling machine, ½″ capacity	Rs. 250/-
7.	One tradle sheering machine 36″ ...	Rs. 650/-
8.	Toolroom equipments ...	Rs. 250/-

Power required 2 B.H.P. Floor .space covered 15′×25′. Output 6 dozs. per day (apprx).

Toys and Plastic Novelties Making : Machines

These machines can give you a good future and big income it requires your efforts, your new ideas your skill your nice new attractive designs shapes and novelties would give you more money. You can make plastic name plates, Electric shades. Display stands, Purses, buttons, Toilet cases, Educational toys, domestic games, Ink stands sports goods thousands other utility items. These machine would cut, fix, stich, finish and assemble all these above items, from wood plywood and plastic sheets (available in all sizes, shapes, colour, in big quantites at reasonable prices). If you find diffiulty we would arrange for you,



You are to first cut the required design and shapes then make it fine by rubbing them, stich or polish and finish.

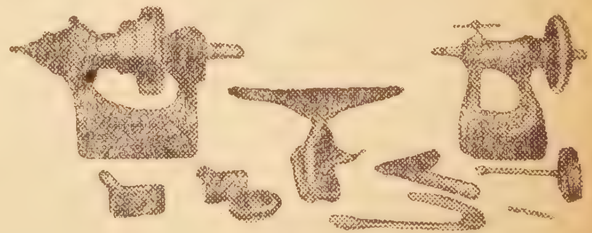
All this out fit consist of saw bench, saw, wide turning lathe fret saw, stitching and punching machine set of files and other accessories. All of good make very enterprising and encourging industry. Price Rs. 167/- man can earn any amount depends on your capacity to do it, and what you do and create.

Cotton, Leather Toys.

For these toys, not much of medium are needed, as most of the job is done by hand.

You require, cutting oppratus, you may use good quality of scissors, sewing machines, sewing needles, pencils, colour pencils, Gum, footrub, paper pins, Drawing and Mechanical tool box, Cardboard sheets, etc.

Making. You make the design on the paper, other article you want to manufacture of the exact size you want. Then measure each part, and write it down. Then make pattern of each part acccording to the size. Then des'gn the same on the cloth or leather, and then cut and stich. Then fill each part of the body with



cotton waste, or paper waste, as saw dust, or grass waste, or any other suitable waste available. When filling is done, close the both ends of the article. Then shape it properly, if more stuffing is need, pnt more waste in it and make the article stuffy as it should not look loose. Then give it finishing touches, by applying colours, giving shades, making hairs, making eyes,

ears, nose, tail etc., or putting number or shape etc. After finishing, check up again and finally pack these in transperant paper, or paper bags. For making such toys, few days training is enough and all ladies and gents can make. Price for the whole equipment Rs. 160/-

Plastic or Rubber Toys

This is a simple process. You make disc of the required toy and inject in the plastic moulding machine and the toy is ready. Then give the finishing touches.

Price for machine Rs. 250/-

,, ,, Disc 75/- each

Rubber

You make moulds of the toys of the desired shape and sizes. Then pour in hot rubber solution let it cool down a little and the toys are ready. Give finishing touches etc., Price for each mould. Rs. 125/- for 2/3 inches size.

உதவையம்

கரமைக்கைத்தொழில் புத்தகம்.

Fruits & Vegetable Industries

From Summer Garden to Winter Table

Fresh vegetables, fruits and berries from your own garden—nothing seems to taste quite like them. Wouldn't you like to keep right on packing fresh tomatœs, peas or peas berries, from your garden through the winter months when market prices are high ? That's exactly what you do, when you can in tin, because the fresh garden flaver is sealed in at the time of processing. The nourishment and vitamins are all retained at their full summer strength.

Don't let surplus food from your garden spoil, Can what you don't use for the table and next winter you'll thrill with pride when you see how fresh your food looks how the natural colour has been preserved and how deliciously different the flavour is. There's a lot of satisfaction in knowing that the food you serve came from your own garden and from your own pantry. You know exactly what's in each can—there never any doubt in your mind about its quality.

High Pressure Sterilizer

High Pressure Sterilization—is essential to Fruit Products Factory, modern medical practice and surgery. Every

Institution whether small or large must possess the means of sterilizing its own Instruments and Dressings if it is to command the respect of the Profession and the confidence of the Public.

The recent issue of the 'British Pharmacopoeia' insists on sterilization as a precaution against contamination. The "**Portable**" Sterilizer is a hignly efficient appratus capable of producing results surpassing those of far more expensive equipment.

The "**Portable**" Sterilizer is belng used throughout the world in Hospitals, Nursing Homes, Laboratories, Medical Missions Abroad, Clinics, Ships, Operating Theatres, Dispensrries, etc.

Model 1. Gas, or Oil		**Price**	**650/-**
,,	**2. Electric**	,,	**872/-**

Electric Juice Extractor

Plain Belt ¼ H. P,

No. I. W. 220 Volts—D. C.

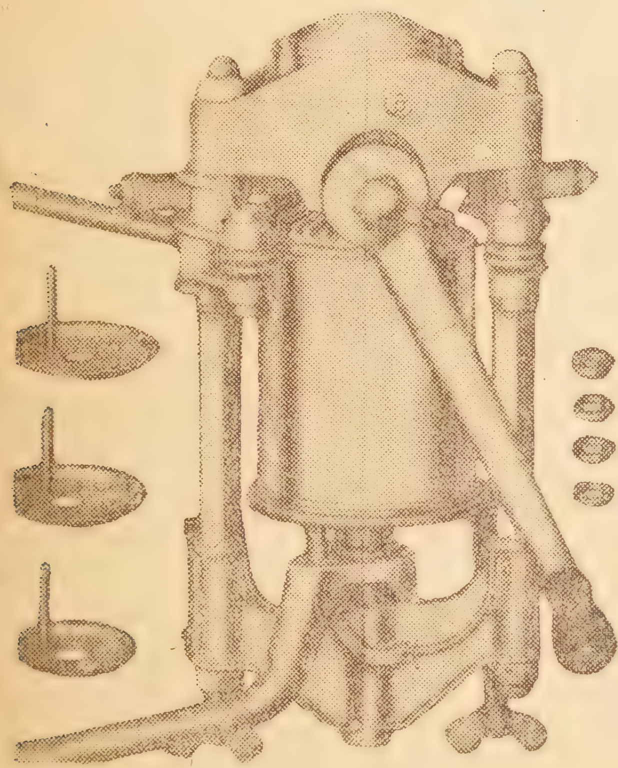
For all kind of Fruits and Vegetables, Like Orange, Lemon, Tomato, Pomegranate, Grape Fruit, Mullbery, Grape, Radish, Pumpkin, Turnip, Carrot, Ginger, Onion etc.

Capacity 45 to 500 lbs. per hour according to Fruits Price Rs. 292/-.

CAN IN TIN

Preserve your Health your Nerves and your Food

Automatic leads the way to canning satisfaction and better foods



It's no easy task to plan and prepars meals each day of the year, year in and year out. Food for the family must contain a variety of needs. It must contain all the elements necessary for the growth and development of children and all the proteins. minerals and vitamins necessary for the family's health and protection against disease, Canning in tin safeguards you against fermentation and spoilage because the cans are sealed absolutely airtight.

You will be surprised how much lighter the task becomes when you have a good variety of canned foods in store for winter Canned fruits, meats, vegetables and berries are a big help in preparing the well balanced meal. It means a great saving in grocery and meat bills too. Many enthusiastic users of the Automatic tell us that they save many times the price of the sealer in one season aione,

Food canned in tin is neatly packed and quickly sealed without solder or wax. It is the one way to preserve your food so that you won't have to worry about spoilage through leakage or breakage. After processing, you plunge the hot cans into cold water and store them away for future use.

Automatic Can Sealer Price	...	Rs. 350	Ready stock.
Pepu Home ,, ,, ,,	...	,, 250	

Capsuling Machine

HANDY No. 2

Two side open for 26, 12, 8. ozs., Bottles
Price Rs. 32/- Stock.

Corking Machine

Handy Wooden

For Pressing the Cork of Bottles Price ... Rs. 8/- Stock.

Crown Corking Machine

For Airtight the Bottle of the Juice Price Rs. 60/- stock.

Electric Juice Crusher

Two side open AC/DC

$\frac{1}{4}$ H P. 220. Volts Belt V.

For citrur fruits only like orange, Lemon, khata, lizban lemon. Capacity 200 lbs per Hour.

Price Rs. 250/-

Vegetables and Fruits Cutting and Drying Industries

A wonderful machine for cutting different vegetables in different shapes and sizes

For Cutting twenty Different Designs of Fruits

This is a simple machine can be used by every one.

Uses of Corrogated Sheet.

Tight the corrogated sheet, a little, above on the wood and cut straight then you get design of potato then you get design No. 2 and 3. No corrugated sheet in the level of the wood and cut straight plain then you get fruit-Faluda Say design No. 4 and 8. Tight the machine in the Centre and makes lines on the level and of potato by the Corrugated Sheet. then you get very fine attractive design No. 5.

Uses of plain knife.

Tight the plain knife a little above the level of wood then you get very fine pieces of coconut, waffers and chips design No. 6.

At this adjustment a thing can also be Pilled. Now raise the blade more say about the thickness of 1/8″ for cutting Tomato Onion.

Tomato and Onion are to be cut slowly and in zig zag way, as they are delicate vegetables.

Tight the plain knife in the centre you can cut every kind of vegetable and non vegetable.

Precautions.

The material used in our product is best available in the market and still to our customer we advise them to apply coconut oil after use.

Drying :—When you know that the vegetables would be out of the season, you buy a large quantity from the market, cut these according to your design and requirements, put some salt on it, and keep in a clean place to dry. After drying you pack then in paper bags and sell in the market, and this will have very good sale. I can definetly say that it is a very good industry, without any investment, and you give to the public, clean, dry vegetables at a low price in off season. Please do try this industry and ask people to adopt to it.

Price :—Rs. 20/-

4. No other size could be made except 9″×4″×3″. Weight of the brick about 6½ lbs.

5. **cement.** Shall be arranged at Government controlled rates prevailing at your station. There will be no dirth of cement for the user of this new machine,

6. **Cost of Production.** Depends upon the cost of Cinders, Kankar, Sand, Bajri and Cement of your place.

7. No ready stocks of machines at Calcutta. Supplies could be had in not less than 6 to 18 weeks from our receiving your order with the advance. Rs. 1000/- or in full.

8. Your man can receive training in two days only.

9. The Bricks could be cut to desired shape.

10. **Mixture.** Could be prepared by hand or it could also be mixed in any empty oil barrel fixed on two pillars. Concrete Mixer will be best.

Plastering. Any sort of plaster could be used to cover up these bricks if desired.

11. The machine is hand driven but could also be used by power at a nominal extra cost. 1 Horse Power Motor will do if driven by electric.

Mixing formula for 10,000 Bricks as follows :—

400 cft. Cinders.
200 cft. Sand.
200 cft. Kankar, Bajri or Stone sweepings any kind and one ton Cement.
1/20th part water.

Price—Rs. 2700/- Delivery—in 6 weeks.

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Wire Nail making Industry

Specification of Automatic Nail Making Machine

Spring type, Nail Making machine, Type NM-B, arranged for group drive through countershaft, by flat belt,

Production capacity : 120 to 220 pcs per minute.

Length of nail produced : Usually 1″ to $3\frac{1}{2}$″.

Size of wire to be fed : B. W. G, No. 17 to No. 9.

Approx. Nett weight : 760 lbs. (350 kgs).

The machine is provided with the following standard equipments and any additional for spare will be supplied at extra as priced respectively.

2 sets (5 pcs) cutting tools each set suitable for nail of length 1″ to 2″ & $2\frac{2}{2}$″ to $3\frac{1}{2}$.

4 sets (8 pcs) Chucks, each set suitable for nail of length 1″ to $2\frac{1}{2}$″, $1\frac{3}{4}$″ to 2″ & $2\frac{1}{2}$ to 3″ & $3\frac{1}{2}$″.

1 set (2 pcs) Hammer spring.

1 set *T*ools.

Wire reel stand, electric motor, line shaft, counter shaft Pullyes, hangers, bearing metals, belts etc. will be quoted at extra againt your definite quantity requirements. Packing schedule :—

One set to a wooden case.

Approx. gross weight 1040 lbs. (470 kgs)

Approx. measurement 50. 5 cft.

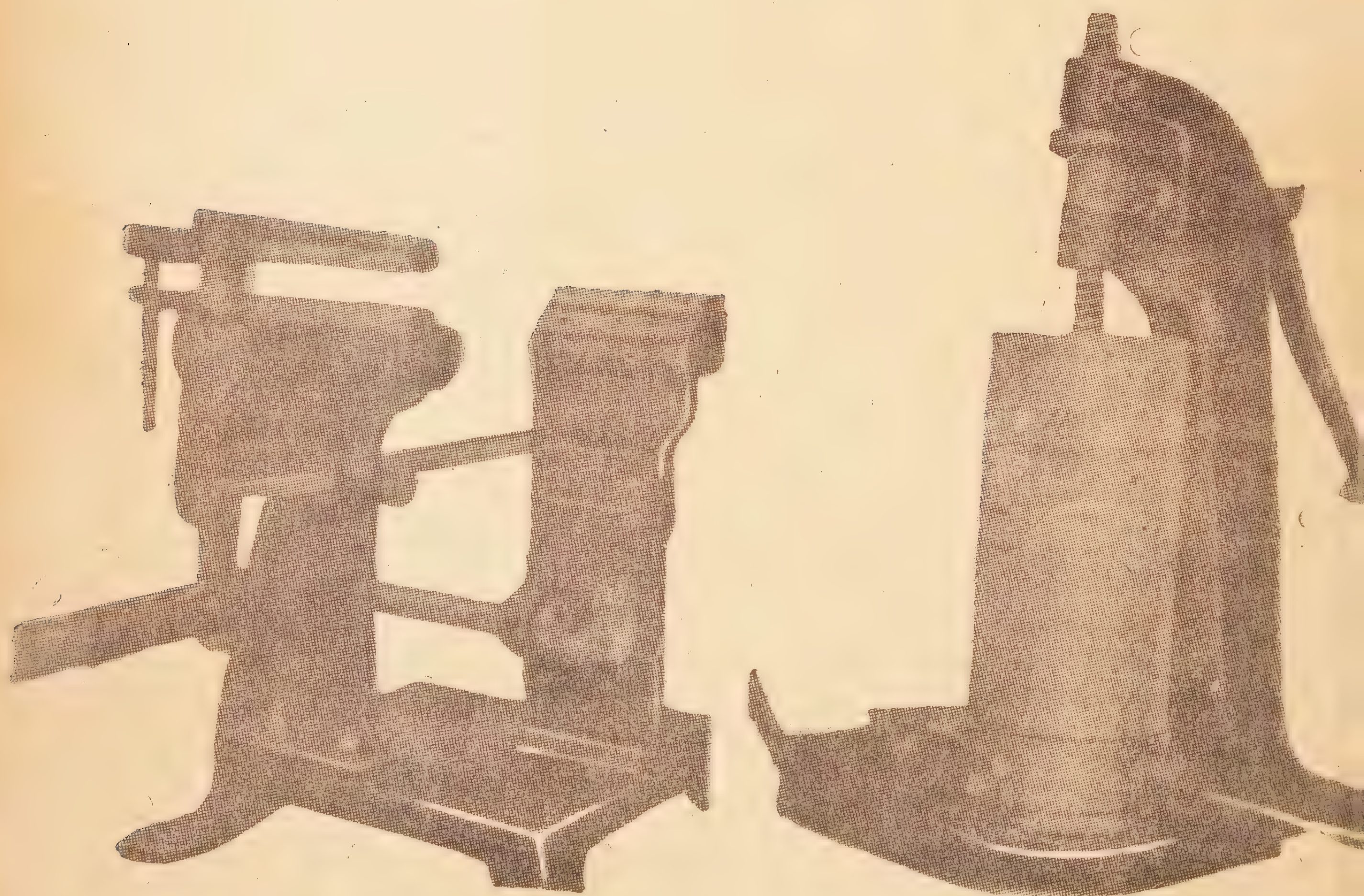
Price. Rs. 3000/- Ex-godown.

This is a very good industry & wire is available in plenty. You can even compete with Tatas, because investment is small, your working cost of small and this is the latest machine.

You have ready market for nails every where.

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Tooth Paste or Ointments making Industry



Foreign imports restricted for tooth paste and there is demand everywhere. You must have seen and tried Neem Tooth Paste of Indian make. Its prewer price was about 4 annas and now it is over a rupee and thousande are sold daily in each city. Same is the case with different ointment. So there is very bright prospects for this industry. We have the complete machine, one mixing machine, one filling machine in Collapsible tubes, on closing machine for closing the ends

of the filled tubes. All made of best material and stainless steel. Japan or foreign make.

Price is Rs. 980/- (Japan) Rs. 670/- (Indian).

Collapsible Tubes : We have good arrangements to supply you these tubes of any size and shapes along with Caps at the following rates :

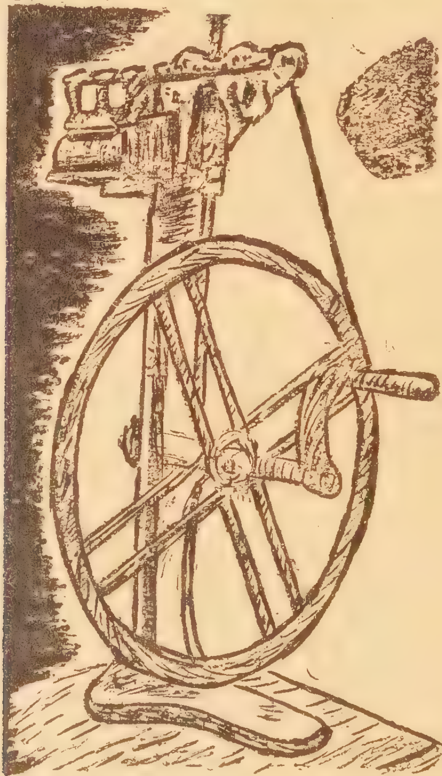
Size :	1 oz.	2 oz.	3 oz.	4 oz.
Rupees ;	87	137	164	195 per 1 thousand.

Working of the machine :

You keep all materials ready according to the formula and exact weightment. Then put it in the mixing machine and stir the handle. Then put the mixid material in filling machine. Press handle then under pressure from the bottom hole the materrial oozes out where you fix up the Collapsible tube and fit it up. Then third process is, close the back end of the tube by this machine and your tooth paste or ointment is ready packed in tubes.

Very profitable and paying industry.

Thread Balls or Reels making Industry

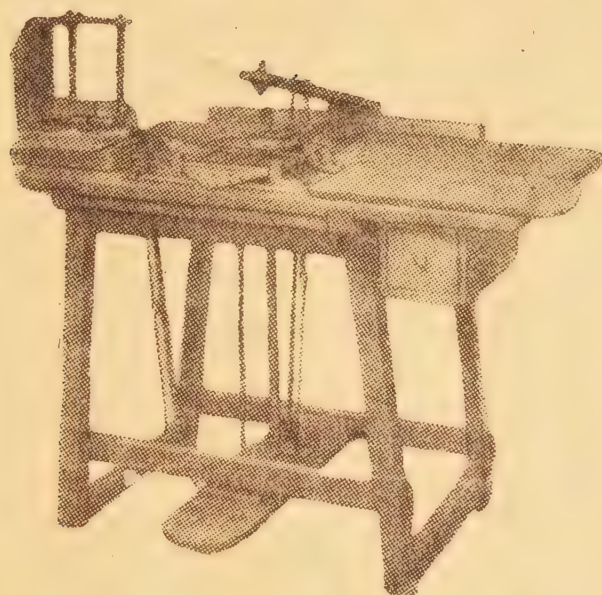


It is purely hard operated made of cast iron throughout. It would wind thread on paper tubes three at a time in ½ minute. In one hour would make about 400/500 rubes. Paper tubes can easily be make by rolling paper on a stick, paste gum and take out the stick and dry the tubes and cut to desired size. After making the reels you put your own trade mark label on it, and sell in the market. It is very simple machine and anybody can handle it. There is no scarcity of thread. You can wind cotton, Silk, Wool, Jute on any other thread. In spare hours people can well handle this line and earn good money.

Price Rs. 595/-

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Envelops making Industry



1. Name of Commodity :—Envelope Making Machine.
2. Specification in detail.

(a) Envelope size :—179 M/M x 120 M/M
145 M/M x 97 M/M

(b) How to use :—Just putting the suitable sized paper into pressing plate, push pedal.

(c) About 1,000 sheets—1400 sheets per hour.

(d) Dimension :—Long : 0·6 meter Height : 0.84 meter
Width : 0.90 meter.

(e) Accessaries :—Changeable Mode 1 set in two pieces.

Pasting Model	2 sheets
Screw Driver	1
Pasting Plate	2
Receptacle for finished Envelope	
Pasting tool	2
Spanner ½-3/8	1

3. Unit Price :—F.O.B. Us $50.65 Japan or Rs. 1820/- Calcutta.
4. Manufacturer :—Kanto Shokusan Kogyo K.K. Delivery 4/6 weeks.
5. Paking : Material : Wooden Case Iron hoop nail
   Contens : 1 set
   Weight . Net 18.75 kgs.

Remark :—This Machine is in very simple and perfect. No. trouble at all.

Anybody can use right way.

Envelope size will be suit to your order.

Area working space :—24″ × 36″.

Die for standard size envelop (3½″ × 5¾″).

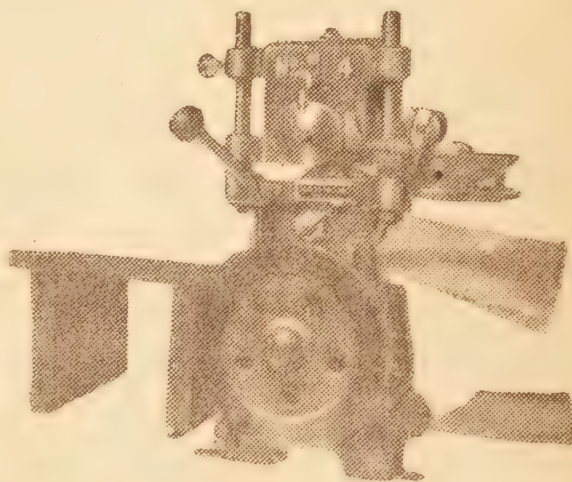
This machine is also suitable for cutting paper bags, lables, out pictures and for cutting card board boxes.

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Micro-Rotary Printing Industry

WORLD'S NEWEST and SMALLEST PRINTING MACHINE WITH HIGHEST PRINTING SPEED FOR BOTH REELS and SHEETS PRINT CINEMA TICKETS, TAGS, LABLES, MONOGRAMS.

Micro-Rotary



Micro-Rotary makes largest output in fine letter-press printing possible with smallest investment. Large quantity jobs are now possible to print at unusually competetive rates. It is amazingly simpler and smaller than the gigantic rotary machines but it is something more than that in as much as it prints both reels and individual sheets of paper at a tremendous speed.

No printing machine could ever attain such a high speed in printing individual sheets as Micro-Rotary. The autofeeder is perfectly synchronised with the machine, and this specially developed pin-feeder is a novelty in the printing trade. With electric motor ($^1/_4$ h. p.) or from suitable line shaft it prints at the rate of ten to twelve thousands per hour easily with fairly accurate registration and can be used at over fifteen thousands per hour with reasonable attention. With auto-feeder it can also be operated by hand at a very high speed. Its working is remarkably smooth and noiseless. The auto-feeder is meant for thick or stiff sheets including envelopes within size

limits 6″×10″ and actual printed area being maximum upto $2^3/_4''\times9''$.

The machine is most suitable for printing a few lines in one length and for large volume of work and will work satisfactorily by anybody of commonsense and it needs no expert printer. It prints from ordinary zinc or copper blocks screwed round an iron mandrel, supplied with the machine, which can be easily taken out for the purpose.

Cylinders are easily approachable for make ready. Impression is adjustable. Letterpress ink is used. Ink is applied to the matter automatically from the ink trough by rubber roller. Ink is adjustable. Inking assembly is provided with six rollers in all. The vibrator roller and slider roller ensure uniform inking. The whole inking assembly can be made to operate without touching the printing matter to facilitate thorough ink distribution before printing starts. The sheets when leave the feeder, remain in firm grip during printing and until it is finally delivered to the conveyor with printed side up. Lever operated friction clutch system has been introduced to bring the machine instantly to a dead half from top speed.

The same machine can be used for thinner sheets like full size letter heads or labes by replacing the autofeeder by hand feeder board, The machine when fed by hand will print much faster than a treadle machine, delivery of the printed sheets being in all cases automatic, paper size being 10″ × any length.

The same machine will print reels of paper or cotton and silk tapes upto $2^3/_4''$ wide unwinding and rewinding before and after printing being automatic. The illustration shows one inch cotton tape of a hosiery mill is being printed which

will be afterwards cut into small labels for fixing on their products.

The invention of Micro-Rotary with its amazingly simple feeding system has widened the scope of Rotary printing which was so long known to be mainly suitable to mordern news offices. Micro-Rotary for its operational simplicity can be used not only by the biggest to smallest printers but also by business, houses large institutions, to meet some of their large quantity printing requirements easily, independently and at subnormal cost. Another remarkable advantage of Micro-Rotary printing machin is that it can also be used by private individuals, men and women, for additional income, whether in city or outside, with smallest investment and labour.

Micro-Rotary is a marvel of mechanical engineering and fine workmanship. Very particular attention has been given to its constructional details for added rigidity and life to withstand rough and heavy use maintaining at the same time its dignified appearance.

Size of Micro-Rotary A model is 6″×8″ base and 14″ high : weight 60 lbs. excluding feeding and delivery system. The machine is mounted on wooden base board.

Price :—Rs. 842/- Hand drive. Electric Drive : Rs. 1294/-.

Tablets and Phills Packing Industry

ASPRO OR PALADOURINE TYPE PACKING



Electrically heated,
Hand-operated Machine
with one set of die for for
slaps of three tablets,

Speed : 100 packs per hour.

Volt : 110/220/230 volts.

Power codsumption : 1/8 K. W. per hour.

Packing Material :

This Machine requires special sort of packing material, either plasticized cellophane or pliofilm in ten inches rolls. we can supply Piofilm in 10" rolls from stock @ Rs. 5-- (five) per pound of suitable gauge.

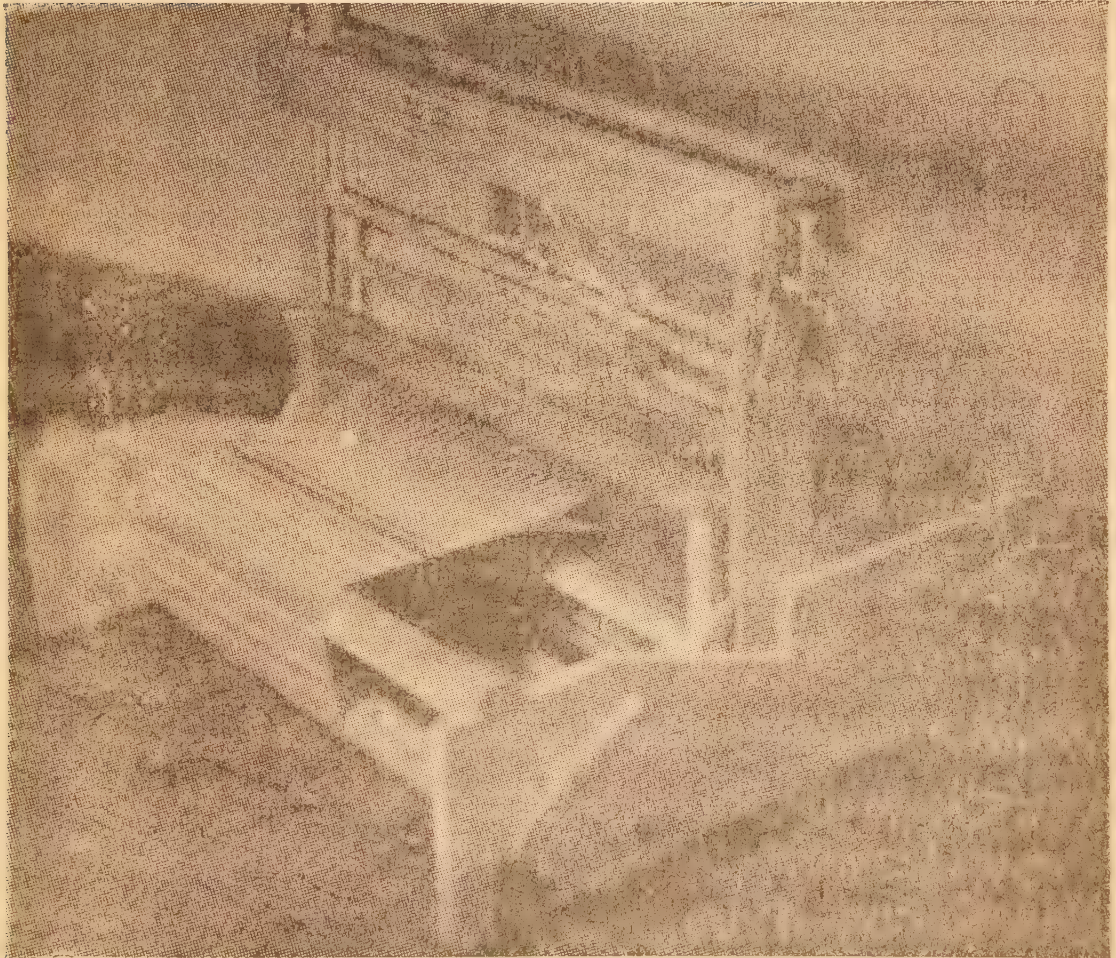
One pound of Pliofilm will be approximately 18000 square inches in area, giving an yield of 3500 to 4000 packs of three tablets.

Working cost of packing these tablets in packs of three tabets to Rs. 3/8 to Rs. 4 per thousand, including packing material, electrical power and labour calculated at Rs. 2/- a working day.

You should know the growing importance and utility of the new industry. You can sell your medicine only when properly, scientifically and hygiencally packed.

Working : Place one layer of paper in the machine and press button, 3 tablets would drop down on the paper surface. Keep the electric plug on, so that you may get contioneous heat for heating the paper. Then press the handle by placing the upper block with the upper layer of paper on the bottom surface. Your packed tablets are ready. Then repeat for for more production.

Hand Loom Industry



Handlooms :

Make : Aditex (Manufacturers : **Edith Schragenheim**, German).

Aditex Looms with their technical superiority and simplicity of operation meet all the necessary requirement. They are particularly suitable for cloth making, **Designing of any Cloth** and for intricate and advanced pattern-weaving with any kind of yarn (cotton, silk, wool or rayon of any thickness or fineness). **Furnishing Fabrics, Curtains, Bedshreads**

Pugree-Cloth, Braidings Blouse Material Chair and Table Covers, Towels, Handkerchiefs, Bags, Floor-mats, Rugs, etc.

These looms are constructed of best seasoned timber and all working parts are of herd wood and steel. Aditex looms have semi automatic lever-operated neddle-shafs (four or more in number according to reqnirement), and have a seperately mounted double hinged reed. The healds are of finest plated and tempered steel wire and the reeds are of polished and ground flat steel. The cloth and warp-beams ore retchet operated and enable the user to weave many yards of cloth at one setting. These looms are so censtructed that any amount of healds can be taken on to the shafts, any reed can be interchanged for any desired spacing of warp-yarn, and any length of warp set up. These looms can be operated sitting on the ground.

All these special features give Aditex-Looms the widest field for use in India. They can be used by all, young and old. in Technical and Craft school and in Refugee Organisations, in Diversional and Occupational Therepy Centres rnn by Civil Hospitals and the Army, in Cottage Industries as also in Textile Mills.

Specifications ; Overall size 24" high, 26" wide. 26" deep.
Width of Woven Cloth upto 24".
Length of Woven Cloth ; 25 yards or more

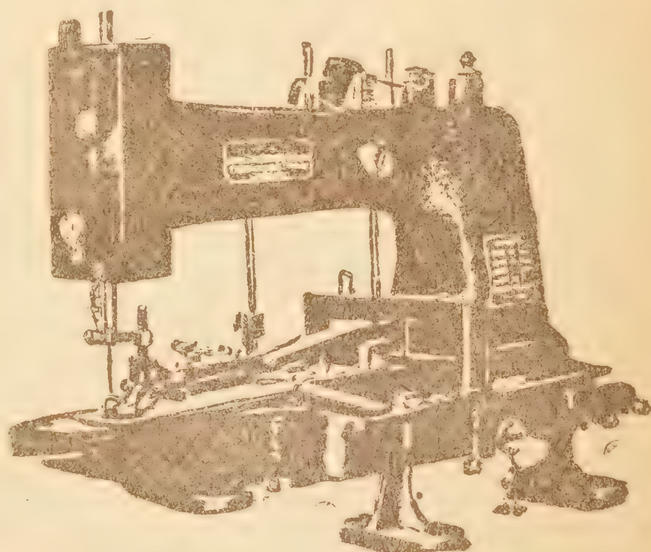
Price : Rs. 125/- ex-godown, Calcutta, packin & despatching extra at cost.

Rs. 175/- " ., for 42" widths cloths.

Rumals & Ready Made Garments Making Industries

Rumal (Handkerchief) making Machine.

You know well, what it is. Do you know the consumption of it. If you go on producing as many rumals with the biggest factory ; and work top most speed for 24 hours, you cannot meet the demand. This is a very simple machine. Just like the sewins machine. It can be driven by hand as well with power. Now there is no derth of cloth of any type and quality and you can produce good qualities. Put your own brand and name and can have a good sale and earn good profits. By hand the production per 8 hours would be about 300 rumals and by power approximately 700. The machine is of U.S.A. make and rebuilt. Price Rs. 550/- each, very good scope.



Along with this we have a cloth cutting machine. Speed Service Economy. The latest efficient machine for cuttiug the entire field of cutting from fine silk to the heaviest canvas, leathers, and plastics is served utmost by this. Useful for manufacturers of hosiery, shoes, tailors, ready made clothes thousands other trades and use. Price Rs. 500/-.

Ready made garments.

What has been stated above the same applies to Ready made garment. Now there is no control, no restriction. You buy price goods from the mills. Get these cut by an expert Cutter strictly according to the extact standard measurements. When cutting is done, you distribute these in yours Colony, Lane, or Street for stitching (to people who have sewing machines if you don't wish to install your own sewing machines). By doing so you will, help yourself and can also employ good many people. When you get the stitched clothes finish :them, by putting lables. sizes. quality, mark and pack them. Then calculate, how much margin of profit you are making. This is how these clothes are made in Japan, U. K. and U.S.A. If you wish to have bigger clothing factory you may install few sewing machines. Electric cloth cutter, and pressing machines, but the system explained above is, better and profitable. I am confident, people would definitly adopt to this industry. All these industries are useful for ladies and gents alike,

Rug Making Industry

Rug Making Machine.

Make English
Driven by Hand/Foot
Made of Strong Enamelled and Brass
Can be fitted on Table, Chair and Stool
Production 6 fit, area daily
Price Rs. 55/-

This new machine which enables you to make beautiful rugs at home in a fraction of time. When using the Rug Maker you can see your pattern face while working and your hands are always free to attend to your design. It is foot operated machine which incorporates a special steamlined needle that glides through the cloth; Velvet, Canves or jute cloth (whatever you want to use). A speed of 100 loops per minute is easily attained. Most complicated designs are easily obtained.

Introduce this machine in your family. This is more useful for ladies.

———

Spray Industry

For printing, distempering painting
Industrial All Purpose Sprayer Unit

How to use

1. Fit the flexible air hose to the Blower Unit by pushing the short end into hard rubber socket on the top of the Blower, making sure that the connection is completely air-tight.



2. Remove the envelope containing the spare jets and spring from the jar and put carefully to one side.

3. Fill the container to within $\frac{1}{2}$ in. of the top with the liquid to be sprayed, making sure that this liquid is of the correct consistency for spraying. (See "Gereral Hints.")

4. Screw container firmly into receiver on gun.

5. Attach gun to hose by inserting the metal swivel into the Gun handlegrip.

6. Switch on Motor by depressing the foot switch situated on the top of the Blower. Air will now be felt issuing from both ends of the gun.

7. Cover the rear orifice of the Gun with the thumb and spraying will commence. To stop spraying remove the thumb.

8. To stop Motor depress the Foot Switch.

Operation

1. The level on the top of the Gun serves two purposes. It controls the position of the feed tube which extends to the bottom of the container, and it controls the intensity of the spray. When spraying upwards the curve on the feed tube should be **towards** the operator. When spraing downwards the curve should be **away** from the operator. The lever also controls a cock in the body of the gun. When the lever is in line with the Gun (either forward or backwards) the cock is fully open and maxium spray intensity is obtained. When the lever is at right angles to the Gun (on either side) the cock is closed and the Gun will not spray. By varying between these positions a wide range of intensity is obtained.

2. A second control of intensity is obtained by screwing the front knurled Jet Cap (*a*) in or out—screwing in intensifies —screwing out reduces the spray. When controlling the intensity by this method always check to see if Gun is opperationally balanced—that is by screwing the rear knurled Jet Cap (*b*) in or out—screwing in will cut off if continuously spraying—screwing out will stop air bubbling from feed tube.

3. Three jets are supplied as standard equipment with each Gun. The large jet should be used for distemper, etc., the medium jet for pains, the fine jet for cellulose. To change the jet unscrew the knurled Jet Cap (*a*) and withdraw the jet complete with Conical Spring (*c*). Change Spring over to the

new jet and re-assemble, the larger diameter of the jet must be towards rear of the Gun, Conical Spring must have widest part towards front of the Gun,

General Spraying Hints

Cellulose—Thin the cellulose with cellulose thinners until it sprays evenly in a fine mist, Cellulose should always be applied in very thin coats, each coat being allowed to dry thoroughly before the next is applied Keep the Gun continually on the move and do not attempt to flood the work with a single coat or you will get an "orange peel" finish. Use the fine jet. Never spray cellulose without wearing a musk.

Oil Paint, Flat—Thin with turpentine and strain through butter muslin, the paint must be thin enough to spray evenly but not so thin that it tends to run off the work. Use the medium jet.

Oil Paint, Gloss.—Thin with linseed oil and/or clear varnish with a very little turpentine. Too much turpentine will destroy the gloss. Gloss paints prepared specially for spraying are on the market and these can be sprayed as received, without thinning. Use *medium* jet.

Distemper, Oil Bound—Thin with water or special distemper thinners. Strain through butter muslin. Use the *large* jet.

Distemper, Powdered—Thin with water and strain carefully through butter muslin. Use the *large* jet.

French Polish, Shellac—Thin with methylated spirits. Use *fine* jet.

Lime Washes—These should be sprayed at about the consistency of "full cream." Keep the container agitated to avoid the solid matter sinking to the bottom of the liquid and choking the feed tube. Use the *large* jet.

Insecticides, Liquid—Spray without thinning. Use *medium* jet.

Insecticides, Powdered—Fill container to within 2 inches of top. **Make sure that both Gun and Container are perfectly dry.** Use different containers for different mediums. Spare containers with screw-on lids can be supplied price 2s each. An extra large container (approx. $1\frac{3}{4}$ pints capacity) can be supplied together with a longer feed tube, price 5s. complete. This container is recommended for distempers and insecticides, We do not recommend its use for paint and cellulose.

Price Rs. 282/-. complete with hose, Gun, cylinder, Electric motor and Guide book.

Fountain-pen Industry

Thse days even a small School boys & girls prefer by using fountain-pen, insteed of carrying with then pen holders and Ink pots, Same applies to everybody. It has become a fashion, it has become a great necessity you may be under the impression that it is a difficult industry, but I may tell you that it is as simple as you simply polish your shoes or repair your clothes. This industry has a great scope. In the construction of pens many devices have been tried to regulate the flow of ink to feed the nib. In the modern penholder a feed bar conveys by cappillary action a free supply of ink to replace that which has been left on the paper in the act of writing, means being also provided by which air can pass into the reservoir and fill the space left empty by the outflowing ink. In the making of a fountain pen we have to manufacture four different parts :



(1) The hollow body which is usually made up of composition materials such as galalith, bakelite etc.

(2) Metallic parts such as ink flow-levers, clips etc.

(3) Rubber tube containers for ink, and

(4) Gold nibs with iridium tips.

At the present stage of our industrial development, it may not be possible for us to manufacture the gold nib and rubber ink containers, or the material of composition for the hollow

body. They shall accordingly have to be imported. But the composition material for the body could be worked into shape here. Metallic parts could be made from Indian materials. All these parts could easily be gathered here into pens.

Process of Manufacture

The process of manufacture is simple. A plant has been introduced into the market to turn out the parts which go to make the body of the pen from composition materials. The manufacture of the metallic portions is easy since it consists of simply cutting the sheet and pressing it into necessary shape with dies in an eccentric press. An ordinary mechanic can carry out every operation.

Fountain-pen

There are two ways for making the body of the fountain-pen. One is by lathe machine, other by using plastic machines.

Specification of the plant capable of turning out 250 pen a day in 8 hours are given below.

(*i*)	One Press with automatic operation for metal parts.	Rs. 820
(*ii*)	One cutting and stamping die for making the small spring filling rod.	„ 170
(*iii*)	One combination tool for making clip fastners.	„ 312
(*iv*)	One tool for filling livers.	„ 294
(*v*)	One combination tool for making the pocket clips.	„ 680
(*vi*)	One foot press	„ 380
(*vii*)	One lathe or one plaste machine.	„ 1800
(*viii*)	One finishing appratus.	„ 210
		4,666

We can deliver this plant to you within 3/2 months time, and can also arrange for irrection and training.

Economics of the Industry Debit **Credit.**

(*per month*).

	Debit	Rs.	Credit
1.	Cost of raw material (for 6.500 pens) :		
	(a) Vulcanite rod.	966/-	Production per month after allowing breakage @ 5%=6275 fountain pens.
	(b) Metallic parts (complete)	40/-	
	(c) Rubber tubes	350/-	
	(d) Gold nibs	11375/-	
		12731/-	Selling price of pens after deducting charges due to commissions on sales etc.= Rs. 36/- per dozen.
2.	Cost of labour wages	303/-	
3.	Cost of motive power	120/-	
4.	Rent, Rates and Tax @ 2% on the cost of production	301/-	
5.	Repairs to plant	80/-	
6.	Repairs to plant @ 10% per annum	122/-	
7.	Depreciation to building @2%P.A.	8/-	Income per per month= Rs. 18825/-.
8.	Packing expenses	200/-	
9.	Other charges	1500/-	
	Total	15365/-	18825/-

Net profit per month .... Rs. 3460

Total out-turn per year ... Rs. 225900 -

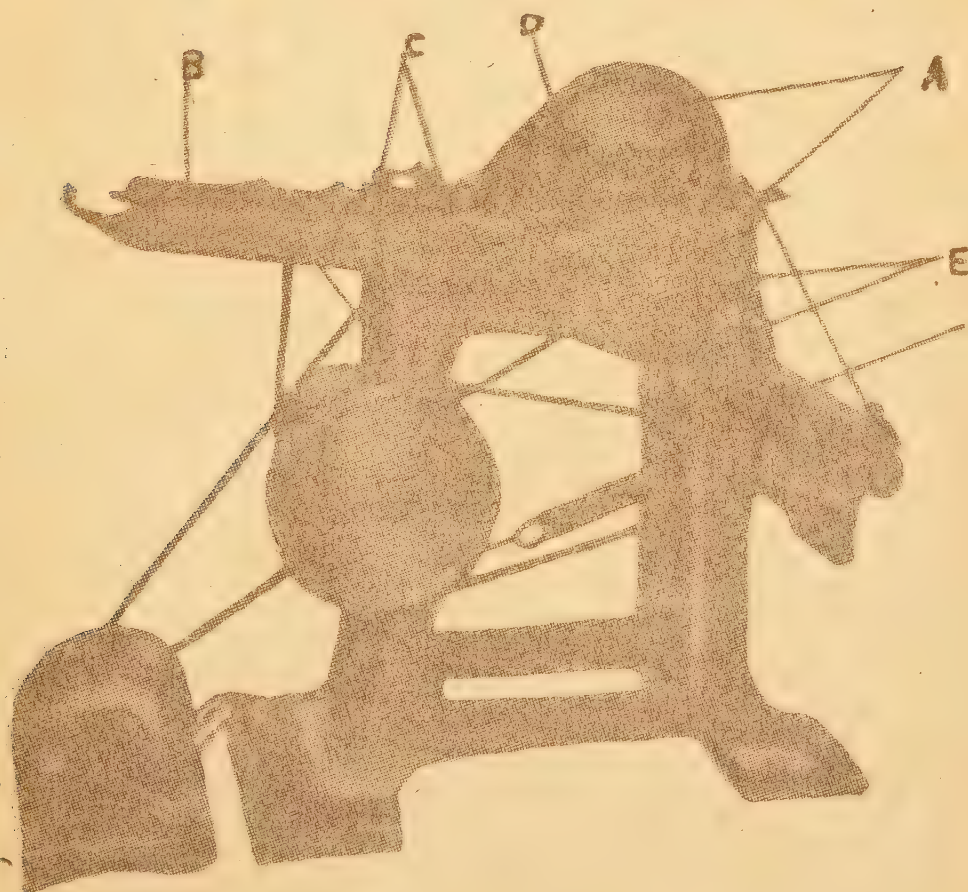
Total expenditure per year .... Rs. 184155/-

Total profit per year ... Rs. 41745/-

22% nett profit on total investment.

Paper Gem Clip and Paper Pins Making Industries

(4) Automatic Gem Clip Making Machine (Japan)



Production : 9000 pieces per hour

Size of wire : BWG 20-22

Producing : small dia 0-8 m/m-29,00,000 pcs,

Quantity : medium 0-9 m/m-21,93,000 pcs.

Per ton : large 0-9 m/m-17,15,000 pcs

Material : Normal wire or bright iron wire or copper plated iron wire

Driving motor : 1/2 H. P. Induction 440 volts, 3 phase 50 cycles,

Delivery : 4 weeks.

Price Rs. 3000/- ex-godown. Without motor.

Name of eqpt. parts : (1) Driving Power Transmission Equipment.

(2) Wire Straightener.

(3) Wire Feeding Equipment.

(4) Bending Die and Shearing Fquipment.

Mfg. process : Wire is straightened by band feeded by 'C' to the decided length. When these process are over, bend Die D advances and next five process act one by one.

1st. bending process by 'I'

Shearing Process by '4'

Half of 3rd bending process by '3'

2nd bending process by '2'

Letter half of 3rd bending process by '3'

Specifications : Floor space 45″×25″

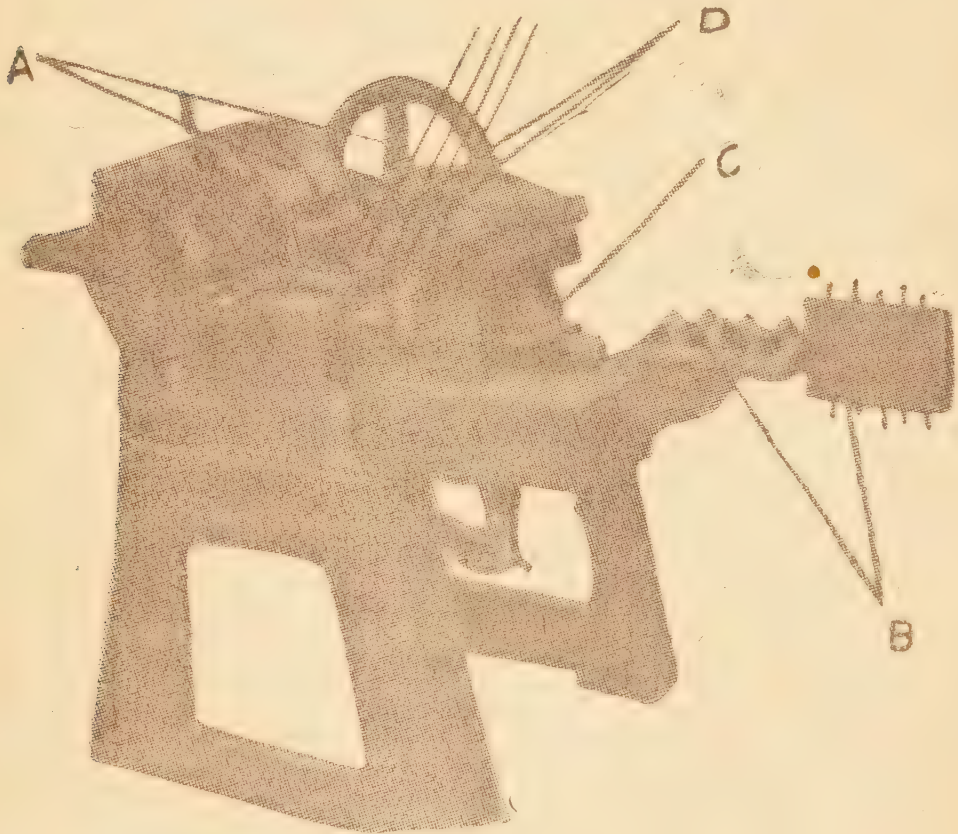
Height : 24″

Weighty : 160 kgs.

Measurement : 45″×24″

The machine is changeable for either larger or small size of clips only be changing the die 'D' and decide length of 'C'.

(5) Paper Pin Making Machine (Japan)



Production Capacity : 8000 pcs. p. h.

Size of wire : BWG 23.

Material : Bright Iron wire dia 0.7 m/m, 0.8 m/m.

Lengths of pins : 23 m. m. to 28 m. m.

Producible qnty. ton : 1,33,00,000 pcs

Driving Motor : 1 H. P. Induction 440 volts, 3 phase, 50 cycles.

Delivery : 4 weeks.

Price : Rs. 5000/-ex without motor

Name of part :

(a) Driving power Transmission Equipment.

(b) Wire Straightener.

(c) Wire Feeding Equipment.

(d) Heading.

(e) Pin Feeding equipment

(f) Grinder

Mfg. process : Wire is straightened by B, feeded by C with decided goods, length, headed by 'D' and cut down. This half finished goods is ground while it passes through F.

Specifications : Capacity 18,000 pcs hour

Floor space 52″×30″

Weight 45 kgs

Driving power : 1 H. P,

Revolution : 250-3000 RPM

Measurement : 52″×30″×45″

Specfn. of wire : Normal Iron Wire Gauge No. 6 ennealed 22 to 28 m.m.

Both of these are automatic and thus require no manual labour. Switch on the buttons, you will find Gem Clips Paper Pins pouring in.

We would strongly recommend you this small scale Industry which requires a very small investment and gives a good yeild of Profit. The wire is available in India but import licences could also be had for importing from other countries. very easily.

When you buy this machine, you should have at least Rs. 1000/- extra for buying of wire, making envelops, boxes, cartoons for packing. Print your factory name on the packing and start earning money.

Tooth Brushes Making

BRUSH MACHINERY

Set of Machinery & Accessories for Manufacture of Tooth-Brushes

(Production capacity about 3000 brushes in 8 hours)

One	Model 'GS' fully automatic boring and filling machine, completely equipped for one pattern of tooth-brush, with electric motor and starter.	£1013		0	0
	One standard set of manhine spares and filling toolspares.	£	25	0	0
	Additional pattern cams, each	£	52	0	0
	Additional filling tools each	£	112	0	0
	One set of filling tools, spare, each	£	25	0	0
One	Model 'TT' trimming and serrating machine with motor and starter and one cutter.	£	139	0	0
	Additional cutters, each	£	23	0	0
One	Hand Guilltine Machine	£	32	10	0
One	Embossing Machine for embossing trade marks etc., with electric heating and automatic foil feed.	£	70	13	6
	Extra for dies according to patterns.				
	Nickel silver strip for use on GS machine per kg.	£	0	18	9
	Immitation Gold or Silver foils, per roll of 23/4″×300″.	£	0	9	11

Cloth and Hair Brushes Making

Set of machines for manufacture of hair brushes, cloth brushes shoe brushes etc.,

(Production capacity about 500 brushes per 8 hours)

One	Semi-automatic boring and filling machines for bruhes upto 3″×3½″ (filled portion), complete for one pattern of brush with electric motor and starter	£1030	0	0
	One set of standard machine and filling tool spares.	£ 33	0	0
	OR			
One	Model 'HH'/'GB' Fully Automatic boring and filling machine for brushes up to 8″×3½″ filled portion) with horizontal and vertial spreads. complete for one pattern of brush electric motor and starter.			
	(a) for brushes upto 3 mm holes	£1321	0	0
	(b) for brushes over 3 mm holes	£1270	0	3
	One set of machine and fillihg tool spares	£ 35	0	0
	OR			
One	Model 'HT/GB' Fully Automatic baring and filling machine for brushes upto 8″×3½″ size with horizontal and vertical spread complete with motor and starters.	£1270	0	0
	One set of machine and filling tool spares	£ 34	0	0
One	Model 'TG' General Purpose flat trimming machine with one cutter, motor and starter.	£ 122	0	0
	Extra set of cutters, each	£ 32	0	0
	Hand Guillotatine	£ 32	0	0
	Gold Blocking Press, embossing area 6″×4″ wires.			

All motors and starters for 3 phase 50 cycle 440 volts AC. Blocking Press suitable for 220 volts single phase. Motors for other electrict current should be supplied upon request at extra price.

All above price for the machines are CIF Bombay, Calcutta, Madras and Karachi. Price of spare parts and extra equipment are Ex works, Portsmouth but there will be no extra packing, forwarding for freight charges if supplied along with the machines.

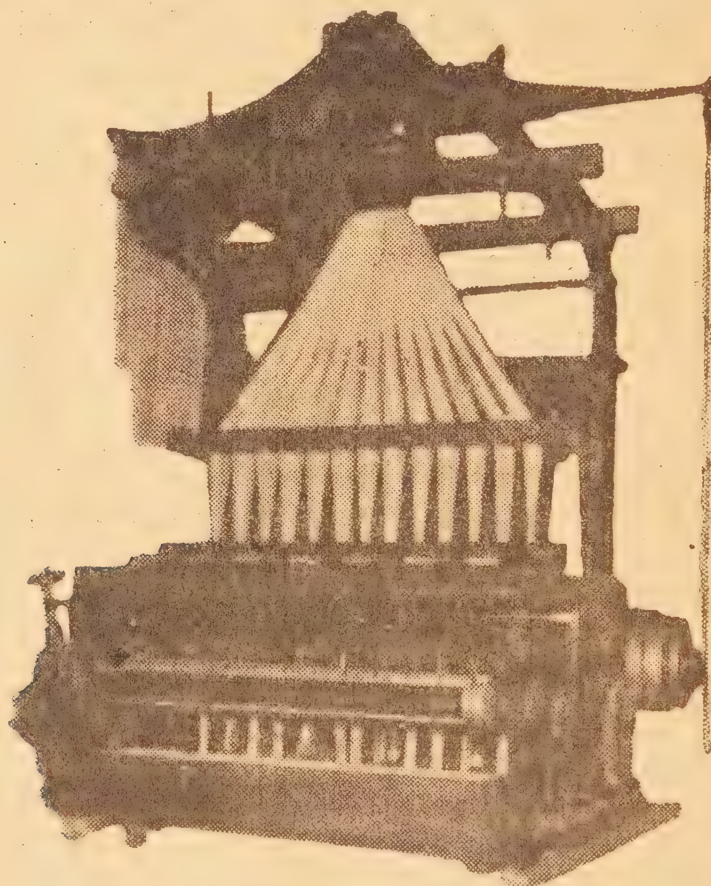
Delivery : Sbipment from U. K. in about three months after receipt of L/C and complete pattern instructions.

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Ribbons, Lables, Tapes Making Industries

The use of Ribbons lables, tapes is daily on tbe increase more especially the use of good quality of woven name lables are wanted by all hosiery manufactures all ready made Garments Factories, all tailors, all woollen mills and thousand other people, and as such it is difficult to say how many are used in daily, but it ruus in several big figures, Before I left for Japan, I had received all such big inquiries for these induries, and accordingly I contacted and saw many factories making and useing these machines. Here I am giving the brief description of the machine, suitable for making all types of

ribbon, lables and tapes. I hope people would take advantage of this. When you feel you are definitly interested. I shall



arrange to import the same and install for you. It may please be noted that all these are approximate prices, smaller unit for the half price can also be imported.

Specification of Ribbon lables and tapes Making Machine

Item 1. *Ribbon making machine* ... F.O.B, Rs. 8,000

Type and Name ; A type Komori's Ribbon Making Machine

Charactor :

Weaving Length per min.			5/8—2″
Nos. of beating per min.			80″—95″
Required HP	1/3 HP. belt drive system		
Dimension	width		95″
	Length		120″
	Height		130″

Kind of machine :

One shuttle box on 2 sets batten
Two shuttle boxes „ „
Three „ „ „
Four „ „ „

Weight „ : about 1,150 kgs.

No. of Ribbon	8	9	10	11	12	13	14	
Width of Ribbon	$3\frac{1}{2}''$	$3\frac{1}{2}''$	$3''$	$2\frac{1}{2}''$	$2''$	$1\frac{1}{2}''$	$1\frac{1}{2}''$	
No. of Ribbon	15	16	17	18	12	20	21	22

Item 2, *Accessories for the above* ... F.O.B. Rs. 195,0

Accessories neccssary for operation of Ribbon making are for example :—

Reeds, Speci.l Shuttles, Bobbins, Wire Healds, Warping Paper, Harness coad, Comber boards, Card Rails, etc.

Item 3. *Komori's Piano Card punchieg machine* F.O.B, Rs. 1,500

Type : E
Character : 100 pieces cord per 1 hour
Frame : Cast iron
Dimension : Width 24″
Length 35″
Net weight : 140 kgs.

Item 4. *Komori's Pirn Winder* ... F.O.B. Rs. 1,600

Type : C 2

Character : 180 R,P.M.
Length of bobbin $\frac{3}{4}''$—$3''$
3 spindles system

	Dimension	: Width 43″
		Length 24″
		Height 35″
	Horse Power	: ½ HP Belt drive system
	Net weight	: 150 kgs.
Item 5.	*Komori's Warping Machine* .... F.O.B. Rs. 2,500	
	Type	: C 1
	Character	: Warp 5 lbs. 3 times
		Winding speed 30″-5″ per min.
	Dimension	: Width 109″
		Length 106″
		Height 62″
	Required HP	: 1/3 HP belt drive system
	Net weight	: 600 kgs.
Item 6.	*Komori's Winding Machine* ... F.O.B. Rs. 25,00	
	Type	: F 1
	Character	: 12 reels hanging
	Diamension	. Width 25″
		Length 102″
		Height 56″
	Required HP	; 1/2″ HP belt drive system
	Net weight	; 85 kgs.
Item 7.	*Komori's Jaccuard machine* (Single cylinder type) F.O.B. Rs. 1,100 (400 Hooks)	
	Type	: C
	Chvolution	: 85—100 R.F,H.
	Diamension	: Width 50″
		Length 11″
		Height 24″
	Net weight	: 70 kgs.

Wallboard Making Industry

Estimated cost for a Prefabricated house with boards made locally.

Grasses and others materials	Rs.	200
Timber for posts ete. ...	"	500
Chemicals ...	"	200
Power etc. ...	"	100
Labour, Supervision, Transport etc.	"	500
Sales Commission, Overheade etc.	"	300
Depreciation, Interest etc, ...	"	200
Contingencies ...	"	300
Reserve	"	200
Anticipated profits.	"	300
	Rs.	2,800

The house has a floor area of 500 sq. feet with a verandh in the front, a Living room, a Dining room and Bed room, besides Kitchen, pantry and bath room. There is provision for a Corridor for servants : the roof is made from special waterproof material. The houses are gauranteed to stand more than 30 years.

The fibrous agricultural residues are well suited for manufacture of structural insulation Boards. If one would look around any village he will be faced with lot of waste which can better be utilised into manufacture of Boards. A certain proportin of saw-dust can also be utilised in their manufacture.

Hill grasses and paddy straw are also useful. Such boards can be utilised either for partition walls, decoration purposes and for outer walls or with suitable lamination as roofing Board. This is not a new discovery, it has been in vogue in Western Countries. Where transport is not a problem and the finished products can be marketed favourably within short distances, these boards made locally with cheap raw material with local labour can definitely compete with the imported boards.

The process for the manufacture of these boards is not a complicated one. The material is collected and dusted free from any adhering impurities like sand etc. These are cut into small pieces and put in a digester and boiled with lime water and sometimes with Caustic Soda in small proportions. This is then made into homogenous mass by the process of masceration. A requisite quantity of this pulp is mixed with a known volume of water and is put into a tank with a wire gauge, fixed to it at the bottom. The wire frame is attached to vacuum forming conical bottom, after the water is drained the frame travels over a series of rollers. The frame with wet board is pressed under a Hydraulic Press, it is then heated through a long tunnel. The length of the tunnel is so arranged that by the time the board passes to the other end of the tunnel, it is almost dry. These dry boards are spread with asphalt emulsion to make them water proof. Chemicals like Silicate of soda, Borax are mixed with pulp if the boards are to be made fire-proof. These are painted according to the purpose for which they are needed.

There is need for some mechanical appliances but these are not difficult to secure. A straw cutter, a rotary digester, a Beater, a Board forming equipment, hydraulic press, drying

tunnel and emulsion spraying equipment, these are all the machineries that are needed, most of them can be made in India. The total cost of these machines would not be more then Rs. 22,000/- —The economic size of such a Board Factory on a Rural Industry is 4 Tons or about 45,000 Sq. fit. of different qualities of Boards per day. It is estimated that this would be sufficient to make three houses, Thus the cost of one house equipped with Boards manufactured locally would be Rs. 2500/- The sale price of Rs. 2,800 per house will not be a high price when it costs nearly Rs. 5,000/- for a small house for a single family with an area of about 500 Sq. fit. Thus the anticipated profit for this concern would be Rs. 900/- per day. The total investment necessary is—

Machinery	...	Rs.	2,00,000/-
Building Sheds	....	"	30,000/-
Other expenses	...	"	20,000/-
Working capital	...	"	20,000/-
	TOTAL	Rs,	3,00 000/-

This Industry can be ranked with high priority, for, it provides accmmodation to the poor man and it is possible that the present shortage of houses in the world can be easily relieved by such small concerns of this type atarted at different centres. The capital needed is small, the yield of profit is sufficiently remunerative and utility is very great. Utilisation of waste materials is the most important aspect in the Industrial development of any country when such an important commodity can be manufactured as a Rural Industry, and it is the shortest cut to successful Democracy.

Food Problem as a War Measures

Shortage of rice and wheat supplies should not worry the Villagers or the Urban Dweller and here is a recipe.

Tried and found most appetising and nourishing.

Banana and Sweet Potato puries

1 lb, sweet potatoes	3 green ripe bananas
½ cup milk	1/4 lb maize ruvo
1 terspoon salt	2 large spoons ghee
1 egg	1 slicelemon

Boil sweet potatoes, skin and mash them. Peel and slice bananas into small pieces, and then fry them in a little ghee till they are soft and pulpy. Add salt, milk, egg and form into dough. Sprinkle a board with ruve and roll out the dough into chapaties. Add a few drops of lemon juice to bananas and place in a layer on the chapati and cover with another chapati. Pinch the edges together dip in ruvo, place in boiling ghee and fry to a light brown.

Cotton Ginning Industry

Cotton Ginning Machine (*Hand process*)

The whole body of the machine is made of strong seasoned Teak wood, fixed with steel rod known as twister.

Size $1\frac{1}{2}' \times 1' \times 1\frac{1}{4}'$.

Weight Appoximately 82 lbs. Packed condition.

Working :—When you get raw cotton from your field or Bazer, it contains cotton seeds, without the removal of these seeds, you cannot bring cotton in any use, Now this machine known as ginning machine would do that job for you. You simply go on feeding cotton containing seeds from one side & go on turning the handle, & on the other side you will get cotton & the seeds fall off autometically. Very good line for ladies & for all members of the family who can spare few hours daily, this would help them a lot in supplementing their income.

Production—10 lbs. per day.

Price Rs. 40/-

A homely industry for ladies for using in spare hours.

———

Gur Making & Its Health Aspect.

Gur making is a basic rural industry of the United Provinces. Of the 80 crore maunds of cane produced in the province annually, 60% is converted into Gur leaving 40% for sugar mills etc. Its annual out-put comes to 6 crore maunds which in terms of money means Rs 60 to 70 crores. Nearly $\frac{1}{6}$th of the total produce is exported to the neighbouring provinces and States and brings in Rs 12 to 15 crores as its value. Manufacturing operations last from middle of October till the end of March. This industry gives employment to at least 12 lacs people during the season.

The areas on which cane is grown being small and scattered, gur is manufactured in small quantities, consequently the industry has been and will ever remain a cottage industry. It relieves unemployment and under-employment in villages as it utilises bullock power in the off seasons.

The manufacturing operations consist of extracting juice by crushing cane by power or bullock driven kolhus, boiling the juice in open pans by direct fire to a thick consistency and letting it to cool to solidify. In order to improve the quality and general appearance of the final product, scum and dust etc., are removed in the course boiling. The quality of gur is considered good when it is sweet and possesses a light yellow colour and a granular structure with the minimum of dirt and foreign matter. The methods of manufacture are primitive and wasteful and need lot of modernisation. This industry has a home market with vast possibilities for expansion.

The consumption of sugar per capita :—

U. K.	...	...	105.4 lb
U. S. A.	...	...	94.8 lb
Australia	...	...	105.8 lb

There is a vast field for increase in consumptoin of gur provided it is available to masses in a wholesome condition at reasonable rate as it is a cheap and wholesome food with dietetic valu 30% superior to sugar.

Addition of gur to the diet of the people goes a long way in maintaining their health and giving them much needed energy and enriches their poor and unbalanced diet. We compare below the nutritive and dietetic value of white sugar and gur ; for, the former is liked and relished while the latter, notwithstaning its qualities, is generally looked down upon by urban people. Sugar cane juice consists of 80 parts of water, 18 parts of sugar and 2 parts of non-sugars. The non sugars are composed of minerals, salts, protein and, other nitrogenous bodies, resins, fats, waxes gums and colouring matters. Manufacture of gur or rab from juice eliminates water and scum only while sugar manufactnre in the factories takes out non-sugars also completely, Gur retains glucose, mineral salts organic substances besides sucrose. Its ingredient are :—

Sucrose 63%, Glucose 19%, Salts 3% and Others 15%.

When analysed, factory sugar, open pan sugar and gur gave the following results :—

product	Iron miligrams per 100 grams of production	Copper miligrams per 100 grams of production

Vacuum pan factory		
white sugar	0·979	0·864
Open pan sugar	0·927	0·891
Gur ...	8·101	0·767

The foregoing data shows that gur has the highest iron content and that there is very little difference in the copper content of gur and factory sugar.

Factory sugar, gur and molasses were tested for there dietetic and nutritive value by keeping rats on milk as basal food with the different sugar products as supplements to their diets. The results were as follows :—

Sugar product supplied	Average weight of rate in grams at the start	at the end	Increase
Open pan sugar	36	125	89
Gur	38	144	106
Molasses	38	150	112

The increase in weight of the animals fed with gur or molasses over that of sugar is appreciable. According to Dr. Kalidas Mitra of Public Heath Laboratories, Patna, gur is richer in ash contents than sugar ; it contains Vitamins B1 & B2.

The industry suffers from many disadvantages, some of which are given below :

(1) It is practised over a wide area and is consequently very much disorganized.

(2) It is a seasonal product and there is glut in the market during manufacturing season, In the off season the rates are generally very high.

(3) It is a hygroscopic product and melts by its own weight. Consequently it is not easy to transport or stock it in good condition.

(4) As the time of stocking advances its quality deteriorates.

(5) No suitable cheap packing to keep it free from dirt etc, has been evolved. Thus it is sold in the market in a condition revolting to the eyes.

Writing Ink---Home Industries

The Ferro gallate writing inks consist of the following raw materials :—

(1) The water medium : Rain water or distilled water may be used. Hard water should not be used.

(2) Permanent Colour : (Callo-tannate of Iron), which is formed in what is called "Mother liquor". The mother ink is prepared by mixing the water solutions of iron sulphate and the Gallo-tannic acids. The Mother liquor is so formulated that the finished ink contains 3 Grams of iron metal calculated per litre, The mother ink writes without any colour and gradually develops into a black colour which is water proof.

(3) Stabilizing Agent : (Dilute Hydrochioric Acid). This chemical when introduced into the ink fluid will keep the ingredients evenly spread in the water medium. It prevents the separation of ingredients and formation of black sediment

at the bottom. It keeps the iron radical of the ink always in a water soluble form and the precipitation is minimised.

(4) Provisicial Colour: Any water soluble Blue dye stuff which is compatible with the acidic nature of the ferro gallate principles of the writing fluid may be used as a provisional colour. The mother liquor containing the ferro-gallate principle at first writes without any colour. Hence the necessity for a provisional colour arises. This Provisional colour at first appears blue while writing and slowly engulped by the black colour development of the mother principle.

Coloured Inks: The other coloured inks such as Red, Blue, Green, Violet etc., are also prepared with these water soluble coal tar dyes. These coloured inks are mere dyestuffs dissolved in rain water and they are not proof against water. Due to the absence of the real Ferro-gallate ink principle in these dyestuff inks their writing always maintains the same tone of colour as at the beginning of the writing. Due to the non-permanent nature of the writing, these coloured inks are only used for fancy and other temporary writings.

(5) Drying Inhibitors: (Clycerine or Sugar.)*

Drying of ink writing: The writing dries mainly by the evaporation of the water medium. A portion of it gets into the meshes of the paper. The mother ink principle, ferro-gallate, develops into a water insoluble black colour during the period of drying.

These drying inhibitors are mostly incorporated into the writing fluids suitable for the use in tropical climates, where the atmostphere is quite dry and free from moisture. Under these climatic conditions the writing fluid will often dry at the tip of the nibs and as a result, the free flowing property

of the ink is lost. The easy flow of the ink in the fountain pen is effected. All this is due to the quick drying properties of the ink vehicle (water) under these tropical climatic conditions. To counteract this defect either glycerine or sugar in very minute properties are introduced into the writing inks.

(6) Drying Accelerators : (Alcohol or rectified spirit).

In cold countries and during rainy seasons the ink writings keep wetness for sufficiently long time even after the writing of the whole sheet is completed. This result is smudging and blurring of the writings. To counteract this defect and to improve the evaporative speed cf the ink vehicle a small portion of a highly volatile aicoholic substance is introduced into the writing ink fluids.

(7) Disinfectants : (Carbolic Acid) Writing ink is a colloidal mixture of organic matter in water. Usually organic matter invites fungus spores in the presence of moisture and air. The water vapour and are and air are considered to be the food for germination and development of fungus growth. The fungus sports move freely floating in the air. Hence writing fluids in a very short time develop fungus on their surfaces. In course of time these fungoid growths increase in their volume and form into jelly like bits. These freely float and move through the writing ink fluid and at the time of writing they obstruct the easy flow of ink. These jellies will form obstruction, in the tubular feeder of the fountain-pen, in its easy flow. To counteract this defect, Carbolic Acid or Oil of Cloves is introduced into the ink in small proportions. This will disinfect the organic ink fluid from time to time and prevent the formation of the fungus growth.

Trade Organisations In India

All the organisations have promised their full co-operation in advancement of Cottage industries, So you should take advantage of their good offices & their co-operation & so you can refer to them for all your requirements or direct to the author.

All India Manufactures Organisation. Bombay

Association of Merchants & Manufactures of Texile Stores & Machinery, Fort, Bombay.

All India Hosiery Development Board, Purana Bazar, Ludhiana (Pb)

Amritsar Textile Manufacturers (The), Amritsar

All India Bobbins Manufacturers Association, Fort, Bombay

Associated Chamber of Commerce of India, Calcutta—1

Amritsar Knitters Association, Bagh Ramanand Gali No. 1, Amritsar

Association of Indian Industries, Bombay

Ahmedabad Wholesales Hosiery Merchants Association, C/o Messrs, Sarabhari & Co., Jama Masjid, Ahmedabad

Ahmedabad Mill Owners Associatian, Ahmedabad

Ahmedabad Texitile Industry Research Associaiion, Fort, Bombay.

Assam Chamber of Commerce, Shillong (Assam)

Africa & Overseas Merchant Chamber, Bombay

Andhra Chamber of Commerce, 272/3 Angapanayak Street, P. T. Madras

Bombay Hosiery Merchants Association, 150 Chakla Street, Bombay—3

Bombay Yarn Merchants Association Ltd. 111 Chawla Building, Tambakanta, Bombay—3

Bombay Chamber of Commerce, Bombay

Bombay Wool Merchants Association, P. O. Box 1275, Forbes Building Campbell Street, Fort, Bombay

Bombay Country Fancy & Grey Piecegoods Merchant Association, Bombay—2

Bombay Wholesale Hosiery Merchant Association, Chakla Street, Bombay

Bharat Chamber of Commerce, Imperial Bank Building, Harrison Road, Calcutta—7

Beawar Wool Merchants Association. Beawar (Rajasthan)

Bihar Hosiery Merchants Association, C/o Messrs, Bihar Knitting Factory, Gulzaribagh, Patna

Bihar Provincial Cloth & Yarm Dealers Association, Patna

Bengal Hosiery Manufacturers Associatlon, 20 Beadon Street Calcutta—6

Bengal Chamber of Commerce, P. O. Box 280 Calcutta

Bengal National Chamber af Commerce, Misson Row Extention, Calcutta

Bengal Millowners Association, 2 Church Lane, Calcutt

Bengal Textile Dealers Association, 30 Cotton Street, Calcutta (West Bengal)

Bharat Hosiery Manufacturers Association. Regd, (The) Hosiery Market, Ludhiana

Calcutta Yarn Merchant Association, 89 Cross Street. Calcutta

Coimbatore District Yarm Merchants Association (The) Coimbatore (S. India)

Civil Hosiery Manufacturers Association, Ludhiana

Cloth & Yarn Merchants Association, Bhagalpur

Calicut Chamber of Commerce, Beach Road, Calicut (S. India)

Calcutta Wholesale Hosiery Marchants Association. 109/A Khengrapatty. Calcutta

Cochin Chamber of Commerce, Cochin (S. India)

Cottage Hosiery Manufacturers Association, Ludhiana

Delhi Hosiery Manufacturers Association, Qutab Road, Sadar Bazar, Delhi.

Delhi Wholesale Hosiery Merchants Association, Sadar Bazar, Delhi

Delhi Factory Owners Federation. Scindia House. Curzon Road, New Delhi

Desi Vastar Bhandar Panchayat, Choura Bazar, Ludhiana

East India Cotton Association Ltd. Cotton Exchange, Marwari Bazar, Bombay

Federation of India Chamber of Commerce & Industry, New Delhi

Federation of Woollen Manufacturers in India, J. K. Building, Dougall Road, Ballord Estate, Bombay

Federation of Gujrat Mills & Industries. Baroda

Federation of Piecegoods & Yarn Marchants Association of India (The) Mulji Jetha Market Hall, Sheikh Memon Street, Bombay—2

Fazilka Wool Merchants Association, Fazilka (Punjab)

Gwalior Hosiery Manufacturers Association, Gwalior

Hyderabad Chamber of Commerce & Industries. Kingsway, Hydrabad Dn.

Hindustan Development Corporation Ltd. Calcutta—13

Hindustan Chamber of Commerce, 206/15 Civil Lines. Cawnpur

Hosiery Manufacturers Association, Regd. (The) Bazar Khiradian, Ludhiana

Hosiery Factories Lessees Association, Ludhiana

Hosiery Workmen & Manufacturers Association, Ludhiana

Hosiery Manufacturers Association, 29 Kishna Market, Amritsar (Pb)

Hosiery Machine Manufacturers Association (The) Millergonj, Ludhiana.

Hosiery Manufacturers Association, Appra, Via Phillaur (Distt. Jullundur)

Hosiery Needles Importers Association, Hindi Bazar, Ludhiana (Pb)

Hosiery Needles Importers & Dealers Association, Hosiery Market, Ludhiana

Hosiery Manufacturers Association, Jullundur (Punjab)

Hosiery Manufacturers Association, Agra (U. P.)

Hosiery Manufacturers Association, Lucknow (U. P)

Hosiery Manufacterers Association, Rampur (U. P)

Hosiery Manufacturers Association, Indore

Hosiery Manufacturers Association, Hyderabad (Deccan)

Hosiery Manufacturers Association, Karur (S. India)

Hosiery Manufacturers Association, (Belgaum)

Hosiery Manufacturers Association, Salem (S. India)

Hosiery Manufacturers Association, Kanpur (U. P.)

Hosiery Manufrcturers Association, Jaipur

Hosiery Manufacturers Association, Coimbatore (S. I.)

Hosiery Manufacturers Associatien, Allahabad (U. P.)

Home Hosiery Manufacturers Association (The) Chawl Bazar, Ludhiana

Hoshiarpur Handlooms Association, Hoshiarpur (Punjab)

International Wool Secretariat, Block No. 1 Room No. 31 Shahjahan Road, New Delhi. Hhone 44851. Grams. Worldwools.

Indian Standards Insitution, 19, University Road, Civil Lines, Delhi—8

Indian Chamber of Commerce (The) (Desi Buparmaddal) Ambala (Ab)

Indian Trade Development. (The) 6/1 Lindsay Street, Calcutta—16

Indian Merchants Chamber, Back Bay Reclamation, Fort, Bombay

Indian Chamber of Commerce, Mallencheri P. O. (Cochin)

Jaipur Hosiery Mfrs. Association, C/o India Hosiery Mills, Johri Bazar, Jaipur City

Jammnagar Wool Merchants Association, Jammnagar (Saurashtra)

Knitting Needles Importers & Dealers Association, Chawl Bazar, Ludhiana

Loharu Wool Merchants Association Loharu (Punjab)

Malabar Hosiery Manufacturers Association, Chellapuram, Calicut (S. India)

Malabar Handlooms Factory Owners Association, Cannanore (S. India)

Maharashtra Chamber of Commesce & Industries, Poona—2

Mysore Silk Association, Chamarajpet, Bangalore

Merchants Chamber of Commerce, Kanpur. (U. P.)

Mill Owners Organisation, Millerganj, Ludhiana

Madras Chamber of Commeree, 1st Line Beach, Madras

Madura Yarn Merchant Association, (The) 2/64 Mint Street, Madras

Madura Yarn Merchants Association, Madura (S. India)

Maharashtra Chamber of Commerce, Churchgate, Fort, Bombay.

National Rayon Corporation Ltd, Bombay I

Nilgiri Trade Association, Old Bank Building, Otacommand

National Power Looms Association, C/o Sund Hosiery Factory, Ludhiana

Northern India Hosiery Manufactures Association, Ludhiana Pb)

Osian Wool Merchants Association, Osian (Rajasthan)

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Punchkuva Cloth Merchants Association, 51 Punchkuva, Ahmedabad

Punjab Hosiery Manufacturers Associatirn, 171/A Harrison Road, Calcutta

Punjab Chamber of Commerce, Delhi

Panipat Wool Merchants Association, Panipat (Punjab)

Pali Wool Merchants Association, Pali (Rajasthan)

Palghat Piecegoods & Yarn Merchants Association The) Palghat (Madras)

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Southern India Chamber of Commerce, Madras I

Silk & Art Silk Mills Association, Ltd. Bombay

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Travancore Chamber ef Commerce, Elleppy, (Travancore)

Tirupur Hand & Power Knitting Union, Tirupur (S. India)

Textile Association (India) Bombay 12

Upper India Chamber of Commerce, Kanpur (U. P)

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Wholesale Hosiery Merchants Association, Sodar Bazar, Delhi

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